

INSTALLATION RESTORATION
PROGRAM (IRP) SITE
INVESTIGATION REPORT FOR
IRP SITE NO.1 AND AREA
OF CONCERN (AOC) NO.1

VOLUME I

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CALIFORNIA AIR NATIONAL GUARD
SEPULVEDA AIR NATIONAL GUARD STATION
VAN NUYS, CALIFORNIA

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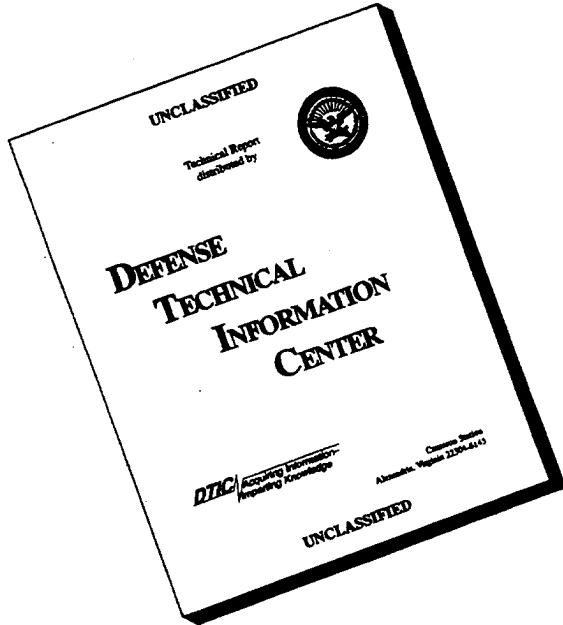


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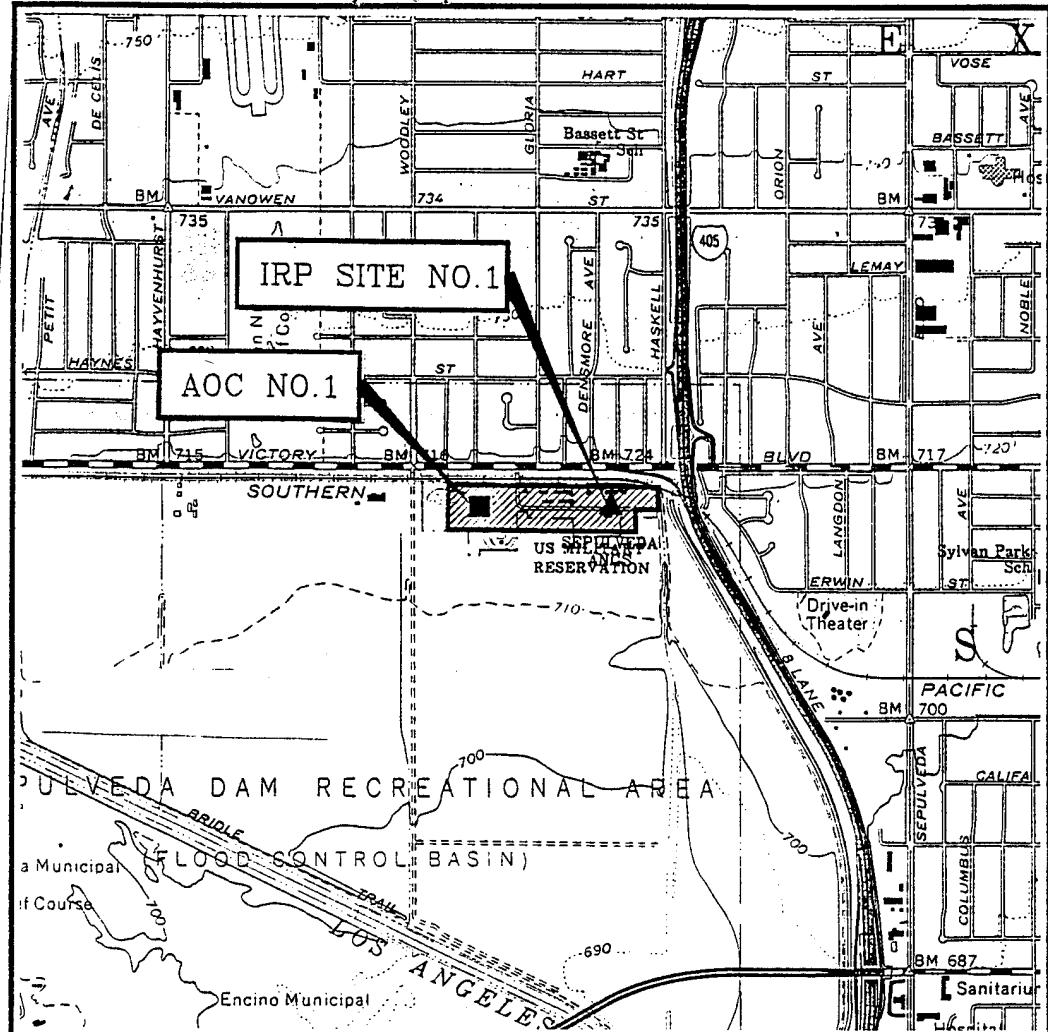
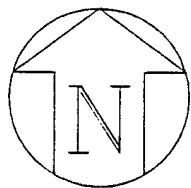
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261st CCSQ, Sepulveda ANGS
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VOLUME I

**261st COMBAT COMMUNICATIONS SQUADRON
CALIFORNIA AIR NATIONAL GUARD
SEPULVEDA AIR NATIONAL GUARD STATION
VAN NUYS, CALIFORNIA**

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JANUARY 1996

Prepared For

**HQ ANG/CEVR
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Prepared By

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LIST OF ACRONYMS

| | |
|-------------|---|
| AGE | Aerospace Ground Equipment |
| ANG | Air National Guard |
| ANGS | Air National Guard Station |
| AOCs | Areas of Concern |
| AOCSL | Area of Concern Sampling Location |
| ARARs | Applicable or Relevant and Appropriate Requirements |
| ASTM | American Society of Testing and Materials |
| ATHA | Ambient Temperature Headspace Analysis |
| BGLS | Background location sample |
| BLS | Below land surface |
| BTEX | Benzene, toluene, ethylbenzene, xylenes |
| BTX | Benzene, toluene, m,p-xylenes |
| C | Centigrade |
| cc | Cubic centimeters |
| CCSQ | Combat Communications Squadron |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| cm/sec | Centimeters per second |
| COC | Chain of custody |
| COE | U.S. Army Corps of Engineers |
| DD | Decision document |
| DERP | Defense Environmental Restoration Program |
| DoD | Department of Defense |
| DOHS | Department of Health Services |
| DRMO | Defense Reutilization and Marketing Office |
| DTSC | Department of Toxic Substances Control |
| EO | Executive Order |
| F | Fahrenheit |
| FID | Flame ionization detector |
| FS | Feasibility Study |
| Ft | Feet |
| GC | Gas chromatograph |
| HQ ANG/CEVR | Headquarters Air National Guard/Installation Restoration Program Branch |
| INFRA | Inhibited red-fuming nitric acid |
| IRP | Installation Restoration Program |
| LARWQCB | Los Angeles Regional Water Quality Control Board |
| LTM | Long-term monitoring |
| MCL | Maximum contaminant level |
| mg/L | Milligrams per liter |
| MSL | Mean sea level |
| MS/MSD | Matrix spike/matrix spike duplicate |
| O&G | Oil and grease |
| OpTech | Operational Technologies Corporation |

LIST OF ACRONYMS (Concluded)

| | |
|-------|---|
| PA | Preliminary Assessment |
| PCBs | Polychlorinated biphenyls |
| PCE | Perchloroethylene |
| Pests | Pesticides |
| PID | Photoionization detector |
| ppb | Parts per billion |
| PPE | Personal protection equipment |
| ppm | Parts per million |
| ppmV | Parts per million volume |
| QA/QC | Quality assurance/quality control |
| RA | Remedial Action |
| RCRA | Resource Conservation and Recovery Act |
| RD | Remedial Design |
| RI | Remedial Investigation |
| RI/FS | Remedial Investigation/Feasibility Study |
| SARA | Superfund Amendments and Reauthorization Act |
| SB | Sampling boring |
| SI | Site Investigation |
| SVOCs | Semivolatile organic compounds |
| TCE | Trichloroethene |
| TEG | Transglobal Environmental Geochemistry |
| TPH | Total petroleum hydrocarbons |
| UDMH | Unsymmetrical dimethyl hydrazine |
| ULARA | Upper Los Angeles River Area |
| USEPA | United States Environmental Protection Agency |
| UST | Underground storage tank |
| UTA | Unit Training Assembly |
| VOCs | Volatile organic compounds |

EXECUTIVE SUMMARY

INTRODUCTION

This report presents the results of the Site Investigation (SI) conducted at Installation Restoration Program (IRP) Site No. 1 (Area Behind Vehicle Maintenance) and Area of Concern (AOC) No. 1 (Lime Pit) located at the 261st Combat Communications Squadron (CCSQ), Sepulveda Air National Guard Station (ANGS), Van Nuys, California. IRP Site No. 1 was identified during the Preliminary Assessment (PA) conducted by Science and Technology, Inc. in 1990 and recommended for further investigation under the IRP. AOC No. 1 was added to the SI at the request of California regulatory agencies.

The Air National Guard Readiness Center/Installation Restoration Program Branch (HQ ANG/CEVR/CEVR) authorized Operational Technologies Corporation (OpTech) to prepare an SI work plan and conduct the SI at IRP Site No. 1 and AOC No. 1. This investigation was conducted as outlined in the SI Work Plan submitted to the HQ ANG/CEVR/CEVR, Los Angeles Regional Water Quality Control Board (LARWQCB), and California Department of Toxic Substances Control (DTSC) in April 1994, and approved in May 1994. The field investigation at Sepulveda ANGS commenced on 6 June 1994 and was completed on 10 June 1994.

The field investigation at Sepulveda ANGS was accomplished by completing the following tasks:

- Install one background sampling location from which three soil samples were collected for analysis of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), priority pollutant metals, pesticides and polychlorinated biphenyls (PCBs), and sulfate to determine background levels;
- Collect 54 soil vapor samples for determining the optimum number and location of soil sampling borings needed to confirm the absence or presence of soil contamination at IRP Site No. 1;
- Install 10 soil sampling locations at IRP Site No. 1 to determine whether contamination exists at the site;

- Collect 24 soil samples from IRP Site No. 1 for analysis of VOCs, SVOCs, priority pollutant metals, total petroleum hydrocarbons (TPH) (diesel and gasoline), and oil and grease;
- Install five soil sampling locations at AOC No. 1 to determine whether contamination exists at the site;
- Collect 16 soil samples from AOC No. 1 for analysis of VOCs, SVOCs, pesticides and PCBs, priority pollutant metals, sulfate, and hydrazine; and
- Survey the location and elevation of all soil vapor sampling points and soil sampling locations.

IRP Site No. 1 (Area Behind Vehicle Maintenance)

IRP Site No. 1 is located on the northeast side of Sepulveda ANGS behind the Motor Pool (Building 6) and along the boundary fence line. The area along the boundary fence line was used, on a regular basis, as a waste disposal area from 1973 until the early 1980s. A loading dock, located south of the boundary fence, was reportedly used for maintenance of vehicles.

Contaminants in soil samples collected during the SI were detected at concentrations exceeding background levels. Lead, TPH, and oil and grease contamination were found in a limited area at a depth of 6 inches to the north and east of IRP Site No. 1 (behind Vehicle Maintenance).

TPH (diesel) was detected at concentrations exceeding background values in soil samples collected from a depth of 6 inches below land surface (BLS) from sampling borings. Soil sampling boring SB-4 is located along the fence line within the area formerly used for waste disposal. Sampling borings SB-5 and SB-6 are located in the vicinity of the former vehicle maintenance ramp. TPH (diesel) was detected at a concentration of 1,400 parts per million (ppm) in the soil sample collected from sampling boring SB-4. Hydrocarbon range C6 - C40+ was detected at a concentration of 1,300 ppm and hydrocarbon range C22 - C40+ and C9 - C19 hydrocarbons were detected at concentrations of 3,600 ppm and 1,700 ppm, respectively, in soil samples collected from boring SB-5. Hydrocarbon range C22 - C40+ and C7 - C10 hydrocarbons were detected at concentrations of 490 ppm and 310 ppm, respectively, in the soil sample collected from boring SB-6.

Lead was detected at concentrations exceeding the background lead value in soil samples collected from boring SB-4 from a depth of 6 inches BLS. Lead was detected at concentrations of 2,400.0 ppm and 850.0 ppm in the soil sample and duplicate soil sample, respectively.

AOC No. 1 (Lime Pit)

AOC No. 1 is located on the west side of Sepulveda ANGS, approximately 55 feet west of the recently built Vehicle Maintenance/Aerospace Ground Equipment (AGE) Facility and 150 feet north of the underground missile storage structures. When the Station was built for use as a NIKE Missile Site in the 1950s, a lime pit was constructed to be used for acid neutralization.

Priority pollutant metal background values were variously exceeded in soil borings at AOC No. 1; however, no levels were substantially above background results.

RECOMMENDATIONS

Based on the results of the SI conducted, the following recommendations are presented:

- The results of the SI indicate TPH, oil and grease, and lead contamination in a limited area to the north and east of IRP Site No. 1 (area behind Vehicle Maintenance). Further investigation is required to delineate the extent of the contamination.
- An Engineering Evaluation/Cost Analysis approach is recommended to fully delineate the extent of contamination and conduct remediation activities, if required.
- The results of the SI indicate no further investigation is warranted at AOC No. 1 (Lime Pit).

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SECTION 1.0 INTRODUCTION

This Site Investigation (SI) report presents the results of the investigation activities conducted at Installation Restoration Program (IRP) Site No. 1 (Area Behind Vehicle Maintenance) and Area of Concern (AOC) No. 1 (Lime Pit) located at the 261st Combat Communications Squadron (CCSQ), Sepulveda Air National Guard Station (ANGS) (also referred to as the Station), Van Nuys, California (Inside Front Cover Figure). A Preliminary Assessment (PA) of the 261st CCSQ, Sepulveda ANGS was conducted by Science and Technology, Inc., in April 1990. Information obtained through interviews, review of Station records, and field observations resulted in the identification of one potentially contaminated disposal site. This site was identified as IRP Site No. 1 (Area Behind Vehicle Maintenance) and was recommended for further investigation under the IRP. AOC No. 1 (Lime Pit) was added to the SI at the request of California regulatory agencies.

The Air National Guard/Installation Restoration Program Branch (HQ ANG/CEVR) authorized Operational Technologies Corporation (OpTech) to prepare an SI Work Plan and subsequent Addendum 1 to the SI Work Plan (collectively referred to as the "SI Work Plan") and conduct the SI at IRP Site No. 1 and AOC No. 1. This investigation was conducted as outlined in the SI Work Plan submitted to the HQ ANG/CEVR, Los Angeles Regional Water Quality Control Board (LARWQCB), and California Department of Toxic Substances Control (DTSC), Region 3, in April 1994, and approved in May 1994.

1.1 INSTALLATION RESTORATION PROGRAM

The Defense Environmental Restoration Program (DERP) was established in 1984 to promote and coordinate efforts for the evaluation and cleanup of contamination at Department of Defense (DoD) installations. On 23 January 1987, Presidential Executive Order (EO) 12580 assigned specific responsibility to the Secretary of Defense for carrying out DERP within the overall framework of the Superfund Amendments and Reauthorization Act (SARA) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. The IRP was established under DERP to identify, investigate, and clean up contamination at DoD installations. The IRP focused on cleanup of contamination associated with past DoD activities to ensure that threats to public health were eliminated and natural resources were restored for future use. Within the Air National Guard (ANG), HQ ANG/CEVR manages the IRP and related activities.

The IRP is divided into six phases as illustrated in Figure 1.1, and defined and described in the following subsections.

1.1.1 Preliminary Assessment

The PA process consists of personnel interviews, a records search, and site inspections designed to identify and evaluate past disposal and/or spill sites that might pose a potential and/or actual hazard to public health, public welfare, or the environment. Previously undocumented information is obtained through the interview process. The records search focuses on obtaining useful information from aerial photographs; installation plans; facility inventory documents; lists of hazardous materials used; subcontractor reports; correspondence; Material Safety Data Sheets; Federal/State agency scientific reports and statistics; Federal administrative documents; Federal/State records on endangered species, threatened species, and critical habitats; documents from local government offices; and numerous standard reference sources.

1.1.2 Site Investigation

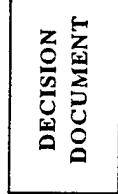
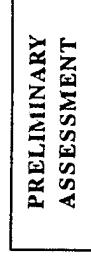
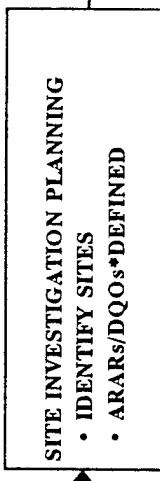
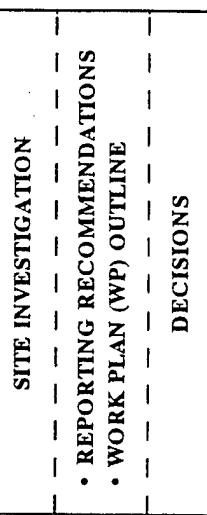
The SI phase consists of field activities designed to confirm the presence or absence of contamination at potential sites identified in the PA or during non-related IRP investigations, and to provide data needed to reach a decision point for the site. The activities undertaken during the SI generally fall into three distinct categories: screening, confirmation, and optional activities.

Screening Activities

Screening activities are conducted prior to drilling activities to gather preliminary data on each site. Screening activities may include the use of such tools as a magnetometer survey to locate underground lines, tanks, and utilities; soil vapor surveys for developing the optimum number and location of soil borings needed to delineate soil contamination, and to be used as a guide in the selection of monitoring well locations; or the installation of a piezometer network in order to determine groundwater flow direction prior to installation of any groundwater monitoring wells.

Confirmation Activities

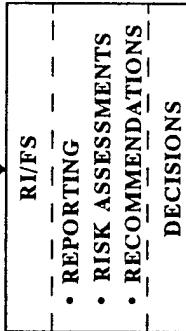
Confirmation activities include the installation of soil borings and/or monitoring wells; specific media sampling; and laboratory analysis to confirm either the presence or the



NO FURTHER ACTION

REMEDIAL INVESTIGATION
FEASIBILITY STUDY (RI/FS)

DQO* DEFINED
WORK PLAN DEVELOPED



NO FURTHER ACTION
REMEDIAL DESIGN NEEDED



IMMEDIATE RESPONSE

WORK PLAN DEVELOPED
FOCUSED FEASIBILITY STUDY (FFS)
REMEDIAL MEASURE (RM)

DQO* DEFINED
WORK PLAN DEVELOPED



IDENTIFY OPERABLE UNITS

IMPLEMENT REMEDIAL
DESIGN

NO

DECISION
DOCUMENT

YES

COMPLETE
PERMANENT
SOLUTION?

FINAL REMEDIAL
ACTION

IMPLEMENT REMEDIAL
DESIGN

NO

CLOSEOUT
DOCUMENTATION

FINAL REMEDIAL
ACTION

* DQOs - DATA QUALITY OBJECTIVES
ARARs - APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

FIGURE 1.1

FLOW OF INSTALLATION RESTORATION PROGRAM TASKS

261st CCSQ, Sepulveda ANGS
Van Nuys, California

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SEPULVEDA SEPULFLOW

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absence of contamination, levels of contamination, and the potential for contaminant migration. Information obtained during the subsurface investigation is also utilized to define the installation and site hydrology, geology, and soil characteristics.

Optional Activities

Optional activities are used if additional data are needed to reach a decision point for a site, such as no further IRP action is warranted, prompt removal of contaminants is necessitated, or further IRP work is required. Optional activities may include increasing the number of soil vapor sampling points or the number of soil borings and/or monitoring wells to be drilled.

The general approach for the design of SI activities is to sequence the field activities so that data are acquired and used as the field investigation progresses. This is done in order to determine the absence or presence of contamination in a relatively short period of time, optimize data collection and data quality, and to keep costs to a minimum. Information, data, and analytical results obtained from the SI field investigation will support the selection of one of the following decisions:

No Further Action (NFA) – Investigation did not indicate harmful levels of contamination that pose a significant threat to human health or the environment. Therefore, no further IRP action is warranted and a Decision Document (DD) will be prepared to close out the site.

Immediate cleanup/remedial activities – Investigation indicates that the site poses an immediate threat to public health or the environment. Therefore, prompt removal of contaminants or measures to reduce contaminant levels to an acceptable limit is warranted.

Remedial Investigation/Feasibility Study (RI/FS) – Investigation indicates further IRP work is required and the next phase of the IRP needs to be implemented. The RI is described more fully in the following subsection.

1.1.3 Remedial Investigation

The objectives of the RI are to determine the nature and extent of contamination at a site, determine the nature and extent of the threat to human health and the environment, and to

provide a basis for determining the types of response actions to be considered (decision document, feasibility study, remedial design, remedial action).

The RI consists of field activities designed to identify and quantify the potential contaminant, the extent of the contaminant plume, and the pathways of contaminant migration. Field activities may include the installation of soil borings and/or monitoring wells, and the collection and analysis of water, soil, and/or sediment samples. Careful documentation and quality control procedures in accordance with CERCLA/SARA guidelines ensure the validity of data. Hydrogeologic studies are conducted to determine the underlying strata, groundwater flow rates, and direction of contaminant migration.

A baseline risk assessment may be conducted which provides an evaluation of the potential threat to human health in the absence of remedial action. The assessment provides the basis for determining whether remedial action is necessary, justification for performing remedial actions, and what imminent and substantial endangerment to public health or the environment exists.

The findings from these studies result in the selection of one or more of the following options:

NFA – Investigations do not indicate harmful levels of contamination that pose a significant threat to human health or the environment. Therefore, no further IRP action is warranted and a DD will be prepared to close out the site.

Long-Term Monitoring (LTM) – Evaluations do not detect sufficient contamination to justify costly remedial actions. LTM may be recommended to detect the possibility of future problems.

Feasibility Study (FS) – Investigation confirms the presence of contamination that may pose a threat to human health and/or the environment, and some sort of remedial action is indicated. The FS is described more fully in the following subsection.

1.1.4 Feasibility Study

Based on results of the RI, the baseline risk assessment, and a review of State and Federal regulatory requirements, an FS will be prepared to develop, screen, and evaluate alternatives for remediation of groundwater and/or soil contamination at the subject sites. The overall objective of the FS is to provide information necessary for remedial alternatives development. The FS is conducted to support selection of a remedy that is: protective of human health and the

environment; attains applicable or relevant and appropriate requirements (ARARs); satisfies the preference for treatment that significantly and permanently reduces toxicity, mobility, or volume of hazardous constituents as a principal element; and is cost-effective.

Activities associated with the FS include the following:

- Development of alternatives;
- Preliminary screening of remedial alternatives;
- Detailed analysis of alternatives;
- Comparative analysis of alternatives; and
- The creation of an FS report.

The end result of the FS is the selection of the most appropriate remedial action with concurrence by State and/or Federal regulatory agencies.

1.1.5 Remedial Design

The Remedial Design (RD) involves formulation and approval of the engineering designs required to implement the selected remedial action identified in the FS.

1.1.6 Remedial Action

The Remedial Action (RA) is the actual implementation of the remedial alternative. It refers to the accomplishment of measures to eliminate the hazard or, at a minimum, reduce it to an acceptable limit. Covering a landfill with an impermeable cap, pumping and treating contaminated groundwater, installing a new water distribution system, and *in-situ* biodegradation of contaminated soils are examples of remedial measures that might be selected. In some cases, after the RAs have been completed, an LTM system may be installed as a precautionary measure to detect contaminant migration or to document the efficiency of remediation.

1.1.7 Immediate Action Alternatives

At any point, environmental managers may determine that a former waste disposal site poses an immediate threat to public health or the environment, thus necessitating prompt removal of the contaminants. Immediate action, such as limiting access to the site, capping or removing contaminated soils, and/or providing an alternate water supply may suffice as effective control measures. Sites requiring immediate removal action maintain IRP status in order to determine

the need for additional remedial planning or LTM. Removal measures or other appropriate remedial actions may be implemented during any phase of an IRP project.

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SECTION 2.0 FACILITY BACKGROUND

Sepulveda ANGS is located in Los Angeles County, approximately 25 miles north of Los Angeles International Airport and within the Sepulveda Flood Control Basin, as shown in Figure 2.1. The Station occupies approximately 26 acres of relatively flat terrain and is surrounded on three sides by the Sepulveda Dam Recreational Area. The Southern Pacific railroad tracks are located along the north boundary of the Station.

Sepulveda ANGS is used as a mobile communication facility with a normal working population of approximately 20 people. The Station serves as a site for Unit Training Assembly (UTA) which meets one weekend per month. During this weekend, the Station population reaches approximately 163 personnel.

2.1 FACILITY HISTORY

Sepulveda ANGS was used as a NIKE missile site by the Army from the mid-1950s until 1973. NIKE Ajax missiles were first deployed at Sepulveda in 1955 and remained in use until 1957. NIKE Hercules missiles replaced the Ajax missiles at Sepulveda in 1958 and remained in use until 1972. In 1973, the ANG assumed the lease on the property. According to Station personnel, when the Army left the premises, all records and documents were destroyed by the U. S. Army Corps of Engineers (COE) because the property was considered to be classified.

The Station houses three abandoned missile silos which were used for air defense during the 1950s and 1960s. The original buildings were constructed by the Army in 1955. The 261st CCSQ was activated at Sepulveda on 1 August 1973. The unit mission is to maintain an optimal capability to install, operate, and maintain mobile communication facilities providing interbase and intrabase communications in support of tactical Air Force operations and State emergencies. The 261st CCSQ uses the silos for storage of equipment and maintenance of radio equipment (Science and Technology, Inc., 1991).

2.1.1 Waste Disposal Practices

The list of chemicals used in operational activities was provided by the Historical Overview of the NIKE Missile System (Environmental Science and Engineering, Inc., 1983); therefore, it is general in nature and refers to a generic list of chemicals that were used at NIKE sites. General operational activities at the NIKE site involved the use of a variety of chemicals (e.g. solvents, battery acid, hydraulic fluids, fuels, and possibly polychlorinated biphenyls (PCBs). Based on

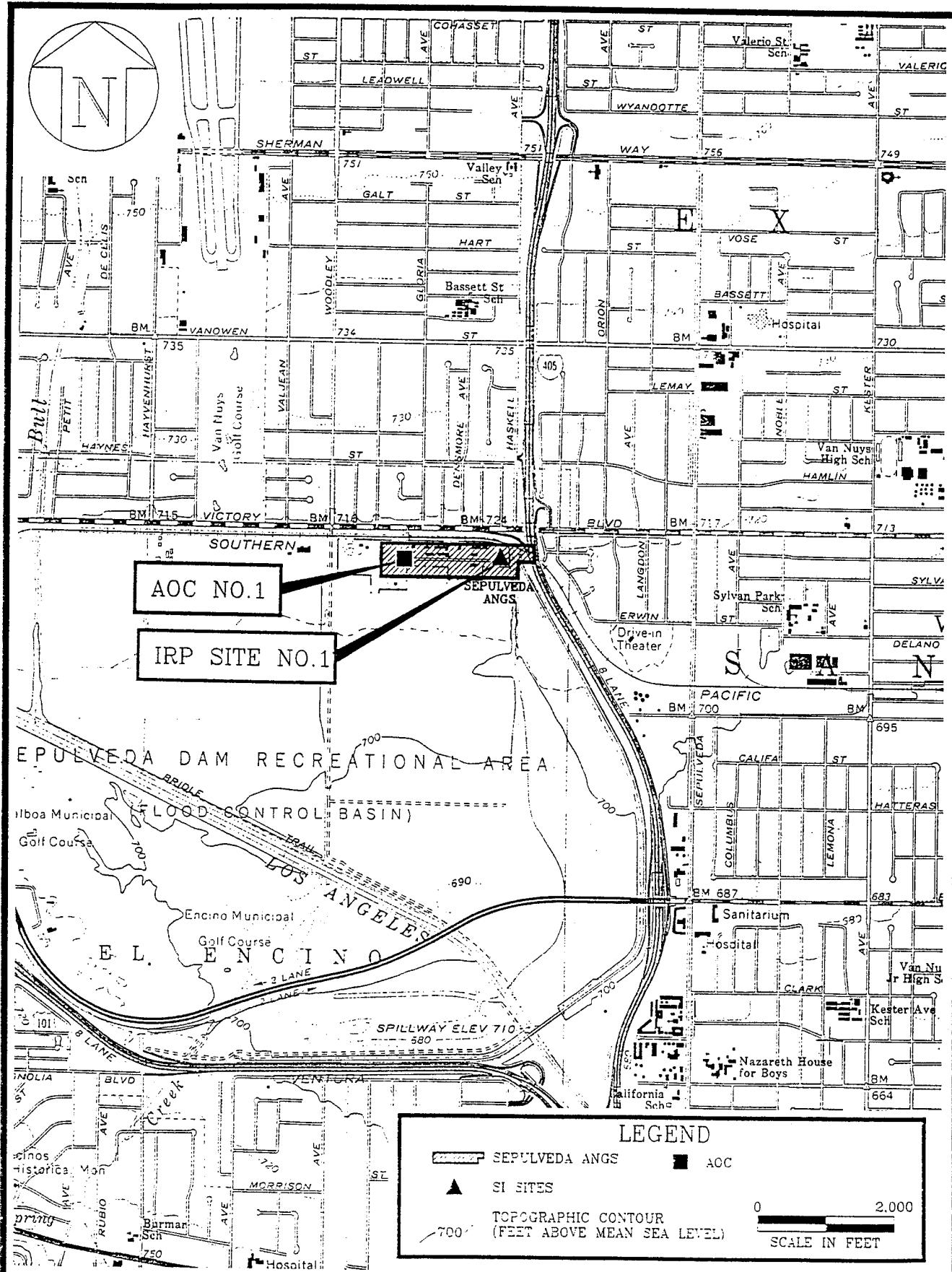


FIGURE 2.1

STATION LOCATION MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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the time period, the likely chemicals that were used are: carbon tetrachloride, PS-661, PD-680, perchloroethylene (PCE), trichloroethylene (TCE), fuels, sulfuric acid (battery electrolyte), hydraulic fluid, motor oil, and various paints and thinners. The propellants used to power both the Ajax and Hercules missiles were a double-based solid propellant, contained in a steel casing in the first stage, and JP-4, with inhibited red-fuming nitric acid (INFRA), in the second stage. Aniline/furfuryl alcohol and unsymmetrical dimethyl hydrazine (UDMH) were used as starter fluids. The Hercules missile also used an ammonium perchlorate-type propellant.

According to the Historical Overview of the NIKE Missile System, disposal methods of waste products included dumping waste into the rock-filled pit in the defuel/refuel area (lime pit), into the septic or sanitary sewer system, into drums for off-Station disposal, or into pits located on the Station. During the PA, interviews with past Station employees and a records search provided no evidence that these chemicals had been dumped on the Station property. Based on the fact that the Station was on a sanitary sewer system and had a lime pit, these two methods were the most likely methods of waste disposal.

Present and past ANG communications support activities at the Station have involved the use of potentially hazardous materials and the disposal of potentially hazardous wastes. These activities are associated with vehicle maintenance, Aerospace Ground Equipment (AGE) shops, generator maintenance, and wash shops.

Maintenance operations require the use and disposal of hazardous materials such as waste oils, fuels, solvents, thinners, and paints. In the past, small amounts of hazardous materials have been spilled or released into the environment at the Station. However, during recent years, hazardous wastes have typically been collected and disposed by a contractor or through the Defense Reutilization and Marketing Office (DRMO) at Port Hueneme, California.

2.1.2 Previous Investigations

A PA of the 261st CCSQ, Sepulveda ANGS was conducted by Science and Technology, Inc., in April 1990. Information obtained through interviews, review of Station records, and field observations resulted in the identification of one potentially contaminated disposal site. This site is identified as IRP Site No. 1 (Area Behind Vehicle Maintenance).

In February 1992, an underground storage tank (UST) removal project was conducted by Ami Adini and Associates, Inc., at Sepulveda ANGS. This project involved the removal of two 5,000-gallon USTs, one located north (designated as T-1) and one located south (designated as

T-2) of the Generator Building (Building 15). Four grab soil samples, collected adjacent to tank T-1 and its associated piping, were analyzed for total petroleum hydrocarbons (TPH) as diesel by United States Environmental Protection Agency (USEPA) Method 8015 modified and benzene, toluene, ethylbenzene, and xylenes (BTEX) by USEPA Method 8020. TPH was detected at concentrations ranging from 413 to 11,000 parts per million (ppm). Four grab soil samples, collected adjacent to tank T-2, were analyzed for TPH as diesel by USEPA Method 8015 modified, BTEX by USEPA Method 8020, and lead using USEPA Method 7420. TPH was detected at a concentration of 11 ppm and lead at concentrations ranging from 3.5 to 17.5 ppm. A contract for the removal of the contaminated soil has been issued. The closure of this site is being coordinated through the Los Angeles Fire Department.

2.2 SITE DESCRIPTIONS

2.2.1 IRP Site No. 1 (Area Behind Vehicle Maintenance)

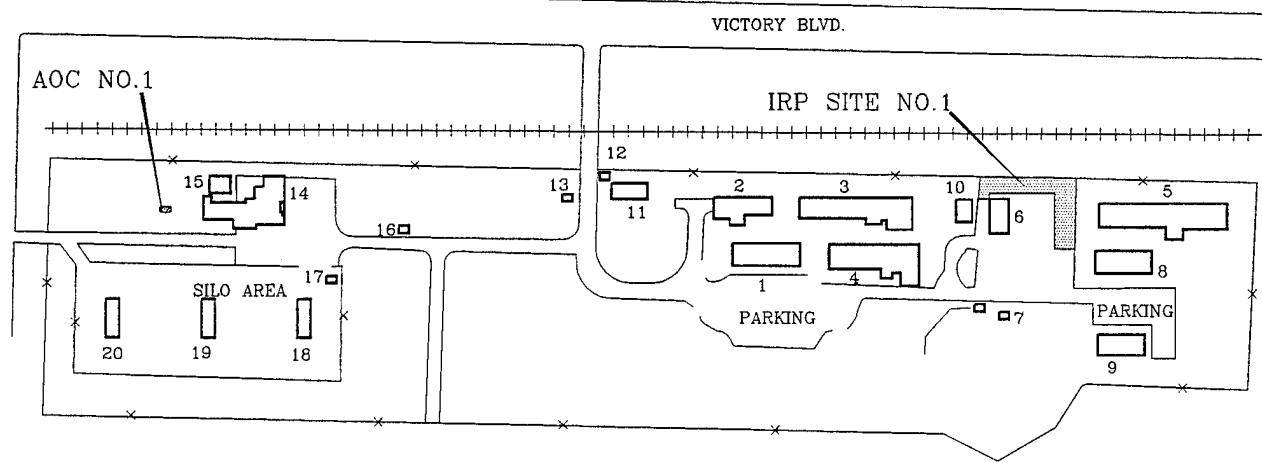
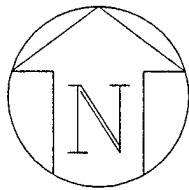
IRP Site No. 1 is located on the northeast side of Sepulveda ANGS behind the Motor Pool (Building 6) and along the boundary fence line (see Figure 2.2). This site is L-shaped, extending approximately 190 feet east along the boundary fence line, then 110 feet to the south as shown in Figure 2.3. The site is covered with soil and vegetation, with the exception of the southern extension, which is covered with asphalt. This asphalted area was the site of the former vehicle maintenance ramp. A 6-foot-high security fence bounds the site to the north.

2.2.1.1 History of Activities

The area along the boundary fence line was used, on a regular basis, as a waste disposal area from 1973 until the early 1980s. The disposed materials included waste oils, hydraulic fluid, and small amounts of paint and solvents. The loading dock, located south of the boundary fence, was reportedly used for maintenance of vehicles. Waste oils were sometimes drained directly onto the ground in this area. The actual quantities of the releases are unknown. During the installation visit conducted during the PA in April 1990, oil-stained soil was observed at the site.

2.2.2 AOC No. 1 (Lime Pit)

AOC No. 1 is located on the west side of Sepulveda ANGS, approximately 55 feet west of the recently built Vehicle Maintenance/AGE Facility and 150 feet north of the underground missile storage structures (see Figures 2.2 and 2.4). When the Station was built for use as a NIKE



SOURCE: SEPULVEDA ANGS PLAN, 1976 (MODIFIED).

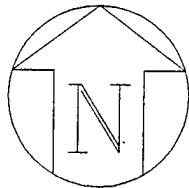
FIGURE 2.2

LOCATIONS OF IRP SITE NO.1
AND AOC NO.1
261st CCSQ, Sepulveda ANGS
Van Nuys, California

SEPULVEDA\SEPU1-2L

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RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO. 1

BLDG. 10

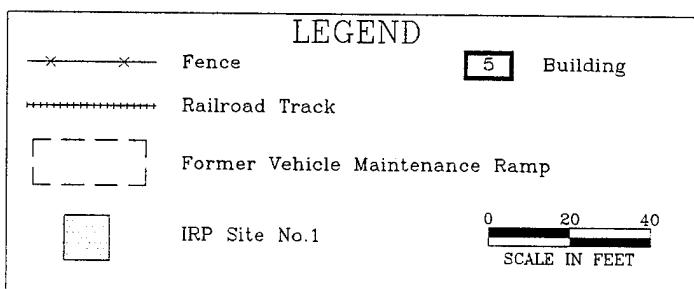
BLDG. 6

OIL/WATER SEPARATOR

BLDG. 5

BLDG. 8

FORMER VEHICLE MAINTENANCE RAMP



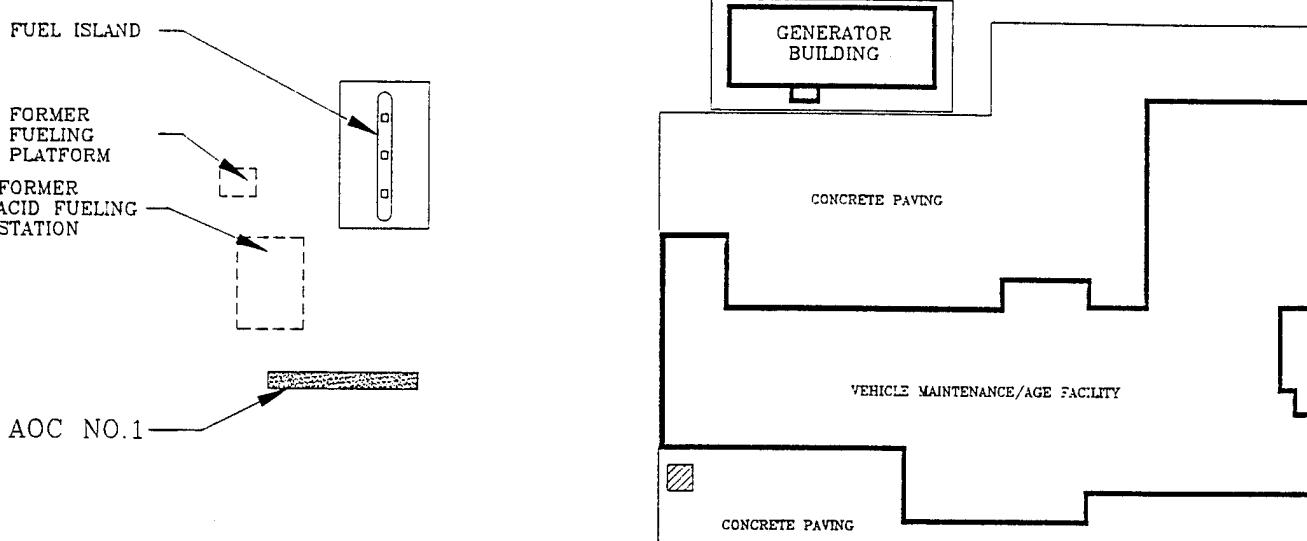
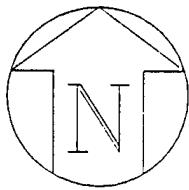
IRP SITE NO. 1 SITE MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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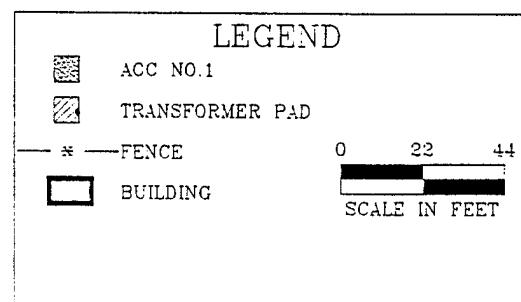
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FIGURE 2.3

SEPULVEDA\SEP12-3I



UNDERGROUND MISSILE STORAGE STRUCTURE



SOURCE: COMPOSITE VEHICLE MAINTENANCE/AGE FACILITY SITE PLAN, 1992 (MODIFIED).

FIGURE 2.4

SEPULVEDA AOC

AOC NO.1 SITE MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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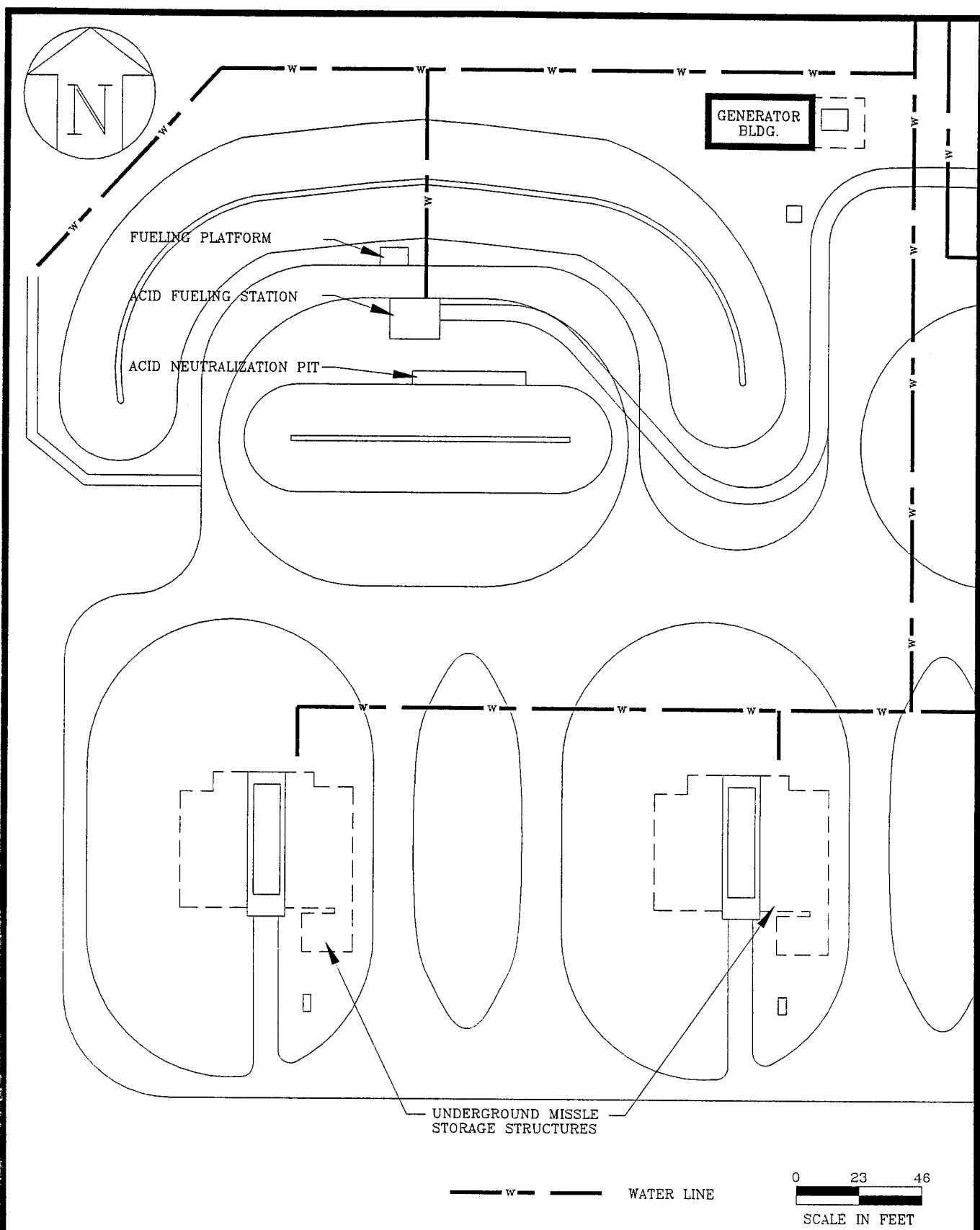
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missile site in the 1950s, a lime pit was constructed approximately 10 feet south of the Acid Fueling Station to be used for acid neutralization (see Figure 2.5). The pit, as identified on the construction drawings, was 4 feet deep, 5 feet wide, and 40 feet in length. The pit was filled to surface grade with 2 inches of crushed limestone.

The concrete structural remains of the Acid Fueling Station and Fueling Platform were removed after 1988 but prior to construction of the AGE facility, and the acid neutralization pit is now located under a 2.5-inch-thick asphalt parking lot. The pit was visible prior to the placement of the asphalt parking lot. During placement of the parking lot, a representative of the Civil Engineering Squadron staked and marked the pit location for future reference. It was later marked with spray paint.

2.2.2.1 History of Activities

General operational activities at the NIKE site involved the use of a variety of chemicals (e.g. solvents, battery acid, hydraulic fluids, fuels, and possibly PCBs). Based on the time period, the likely chemicals that were used are: carbon tetrachloride, PS-661, PD-680, PCE, TCE, fuels, sulfuric acid, hydraulic fluid, motor oil, and various paints and thinners. The neutralization of acid was the original design use of the lime pit.



SOURCE: LOS ANGELES DEFENSE AREA, SPECIAL AAA, SITE LA-98-L, TACTICAL FACILITY, 1955.

FIGURE 2.5

SEPULVEDA PIT

1955 LOCATION OF ACID
FUELING STATION AND ACID
NEUTRALIZATION PIT
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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SECTION 3.0 ENVIRONMENTAL SETTING

The environmental setting of Sepulveda ANGS is presented through discussions of physiography, climate, geology, soils, hydrogeology, surface water, and endangered fish and wildlife. These discussions incorporate both regional and local perspectives.

3.1 PHYSIOGRAPHY AND CLIMATE

Sepulveda ANGS is located in Los Angeles County within the Transverse Range province of coastal southern California. This province is one of three which make up the Los Angeles physiographic basin. The Transverse Range province, a physiographic and structural unit which trends east-west at nearly right angles to the northwest-southeast trend of the Coastal Range and Peninsular Range provinces, consists of elongate mountain chains flanked by hills, valleys, and basins. One of the mountain-enclosed valleys, the San Fernando Valley, is the site location for the Station.

Sepulveda ANGS is located on relatively flat terrain with a surface elevation of 717 feet above mean sea level (MSL), and with gentle slopes of less than 1 degree toward the south into the Sepulveda Dam Recreational Area (Los Angeles River Flood Control Basin) (see Figure 3.1).

The San Fernando Valley has a mild climate with warm, dry summer days. The average annual temperature is 63.7° F. Monthly average temperatures range from 53.5° F in January to 75.6° F in July/August. Annual precipitation at the Station, based on a 29-year record from 1951-1980, averages 16.0 inches. Evapotranspiration in the Van Nuys area is close to 58 inches per year, resulting in a net annual precipitation of -42 inches. Most of the yearly precipitation occurs during the period from March through November.

3.2 GEOLOGY

The San Fernando Valley is basically a faulted synclinorium with approximately 15,000 feet of low density marine Miocene and Pliocene sediments overlying older granitic basement. These Miocene and Pliocene sediments are overlain by Quaternary/Recent alluvium and alluvial fans. A generalized column depicting lithology of the stratigraphic units is presented in Figure 3.2. The first column is from an area approximately three miles south of the station. The second is located in the Los Angeles Basin and is approximately 10 miles east of the station. The Quaternary deposits average 1,500 to 2,000 feet in thickness and are moderately porous and permeable. To the south, the Santa Monica Mountains are high density Miocene basaltic/

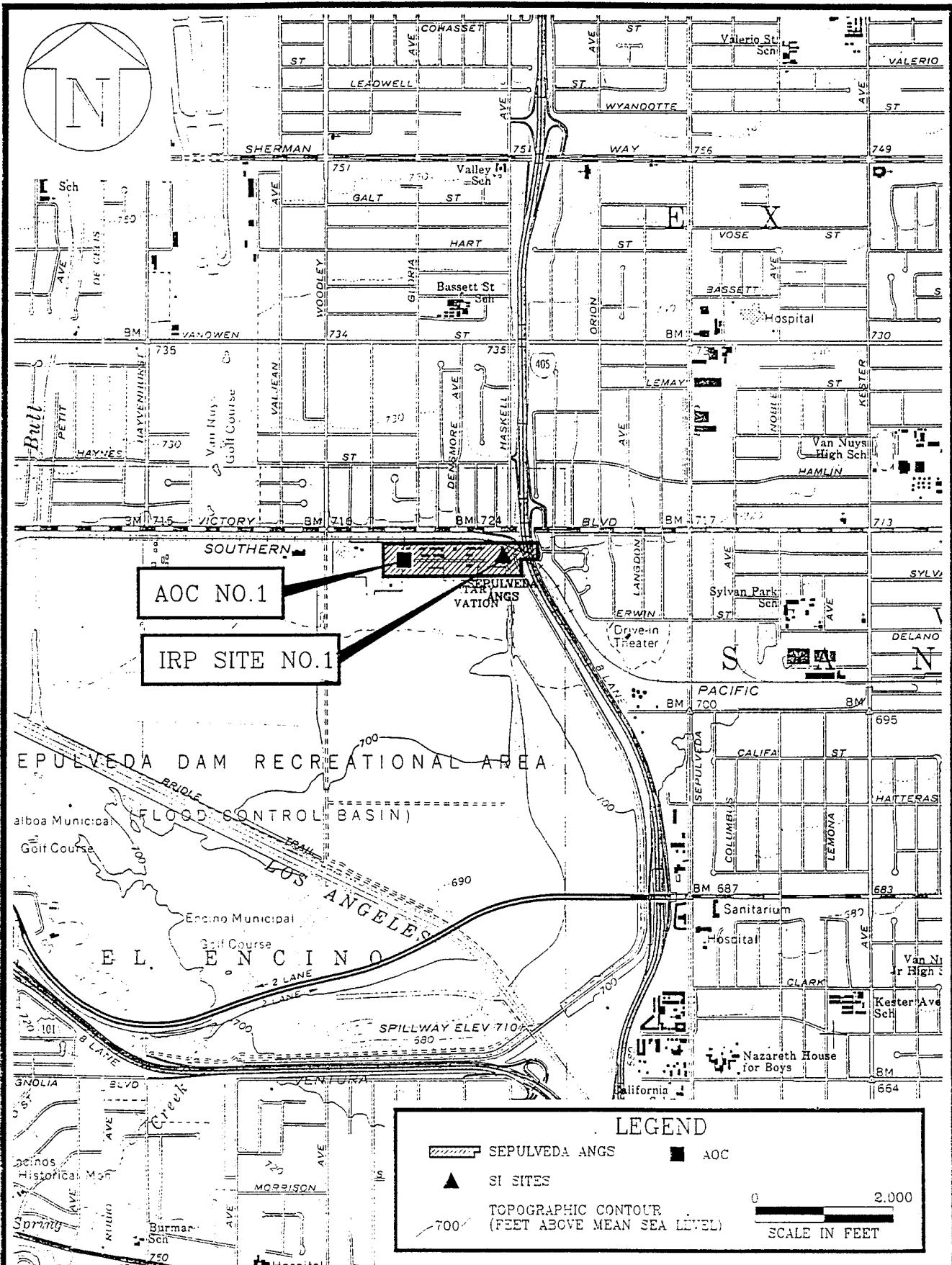


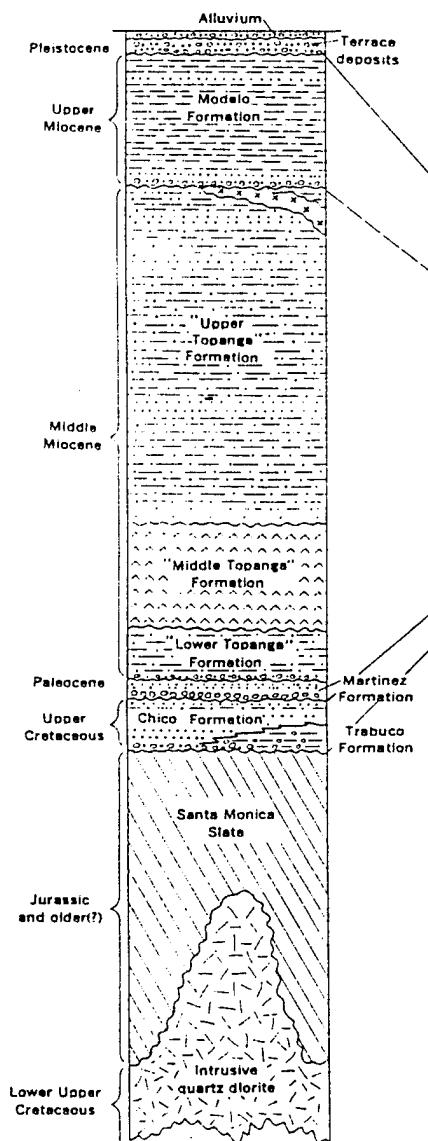
FIGURE 3.1

USGS 7.5' TOPOGRAPHIC
QUADRANGLE MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

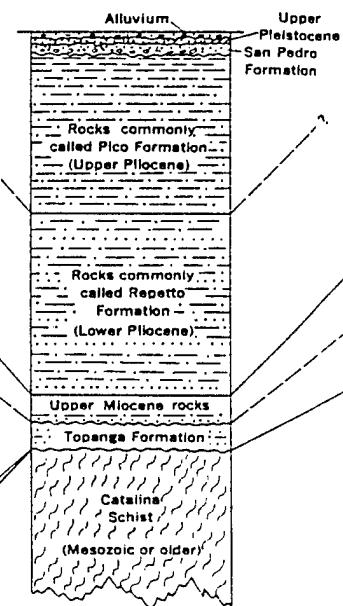
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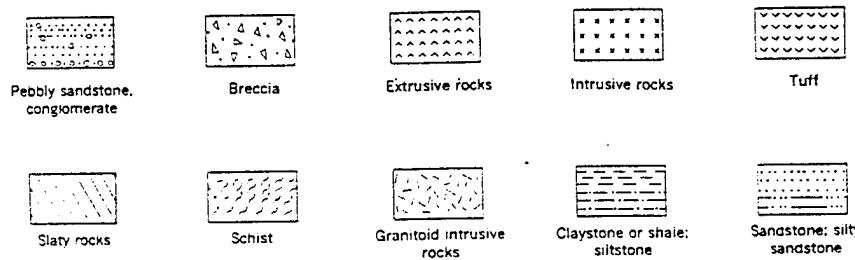
Eastern Santa Monica Mountains,
north of Santa Monica
fault zone



Ballona Gap



EXPLANATION



SOURCE: UNITED STATES GEOLOGICAL SURVEY, 1965, (MODIFIED).

NOT TO SCALE

FIGURE 3.2

FORMS PORTRAIT

GENERALIZED LITHOLOGY OF
STRATIGRAPHIC UNITS (NORTHWEST
REGION OF LOS ANGELES BASIN)
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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diabasic intrusive rocks and upper Jurassic and Triassic marine sequences. The San Gabriel Mountains, to the north, are a combination of Precambrian crystalline rocks surrounded by Mesozoic granitic rocks, which are associated with major transcurrent faults (San Gabriel and San Andreas faults).

3.2.1 Surficial Geology

Sepulveda ANGS is underlain by unconsolidated alluvium and alluvial fan sediments. Silt is the most common sediment type within the uppermost 50 feet of unconsolidated sediments. The alluvial silts consist of light brown to dark brown, clayey silt to sandy silt with lenses of silty sand. A geologic map of the Los Angles Basin (Figure 3.3) depicts the surficial geology of the area in close proximity to the site.

3.3 SOILS

The soil at Sepulveda ANGS is of the Yolo association which are well-drained soils developed on the alluvial fans underlying the Station. The surface layer is a grayish brown, medium acid to slightly acid loam having a thickness of 18 inches. The subsoil, also about 18 inches thick, is a grayish to brown, neutral loam to near silty loam. The substratum extends down to approximately 60 inches and is a light yellowish brown, neutral loam to near silty loam. Surface soil permeability is moderate (4.45×10^{-4} centimeters per second (cm/sec) to 1.41×10^{-3} cm/sec). The information pertaining to soil was derived from the Report and General Soil Map, Los Angeles County, California (U. S. Department of Agriculture, Soil Conservation Service, June 1967, revised 1969).

3.4 HYDROLOGY

3.4.1 Hydrogeology

The Upper Los Angeles River Area (ULARA), which includes the San Fernando Basin, roughly corresponds to all of the watershed of the Los Angeles River and its tributaries that are contained within the area bounded on the north and northwest by the Santa Susana Mountains; the north and northeast by the San Gabriel Mountains; on the east by the San Rafael Hills, which separate it from the San Gabriel Basin; on the south by the Santa Monica Mountains, which separate it from the Los Angeles Coastal Plain; and on the west by the Simi Hills (Upper Los Angeles River Watermaster, 1990). In addition to the San Fernando groundwater basin, three additional separate basins are present within the ULARA. These basins, which comprise less

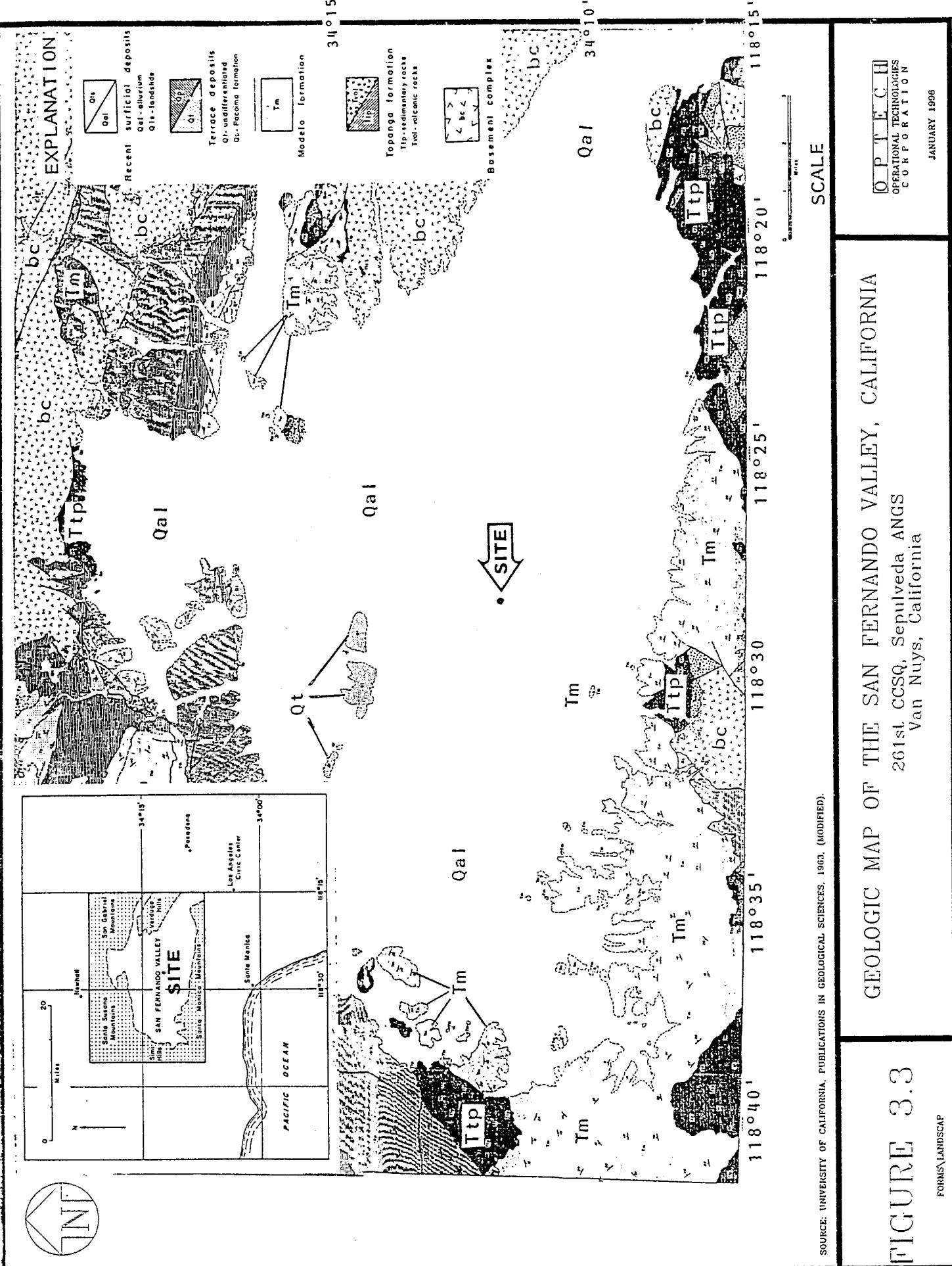


FIGURE 3.3

SOURCE: UNIVERSITY OF CALIFORNIA, PUBLICATIONS IN GEOLOGICAL SCIENCES, 1963. (MODIFIED).

2261st CCSQ, Sepulveda ANGS
Van Nuys, California

MAP OF THE SAN FERNANDO VALLEY, CALIFORNIA.

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than 10 percent of the total acreage encompassed by the ULARA, are the Sylmar, Verdugo, and Eagle Rock. The water supplies of these basins are separate and are contained within Quaternary alluvial aquifers. In addition, the supply of water is replenished by deep percolation from rainfall, surface runoff, and from a portion of the water that is imported for use within these basins.

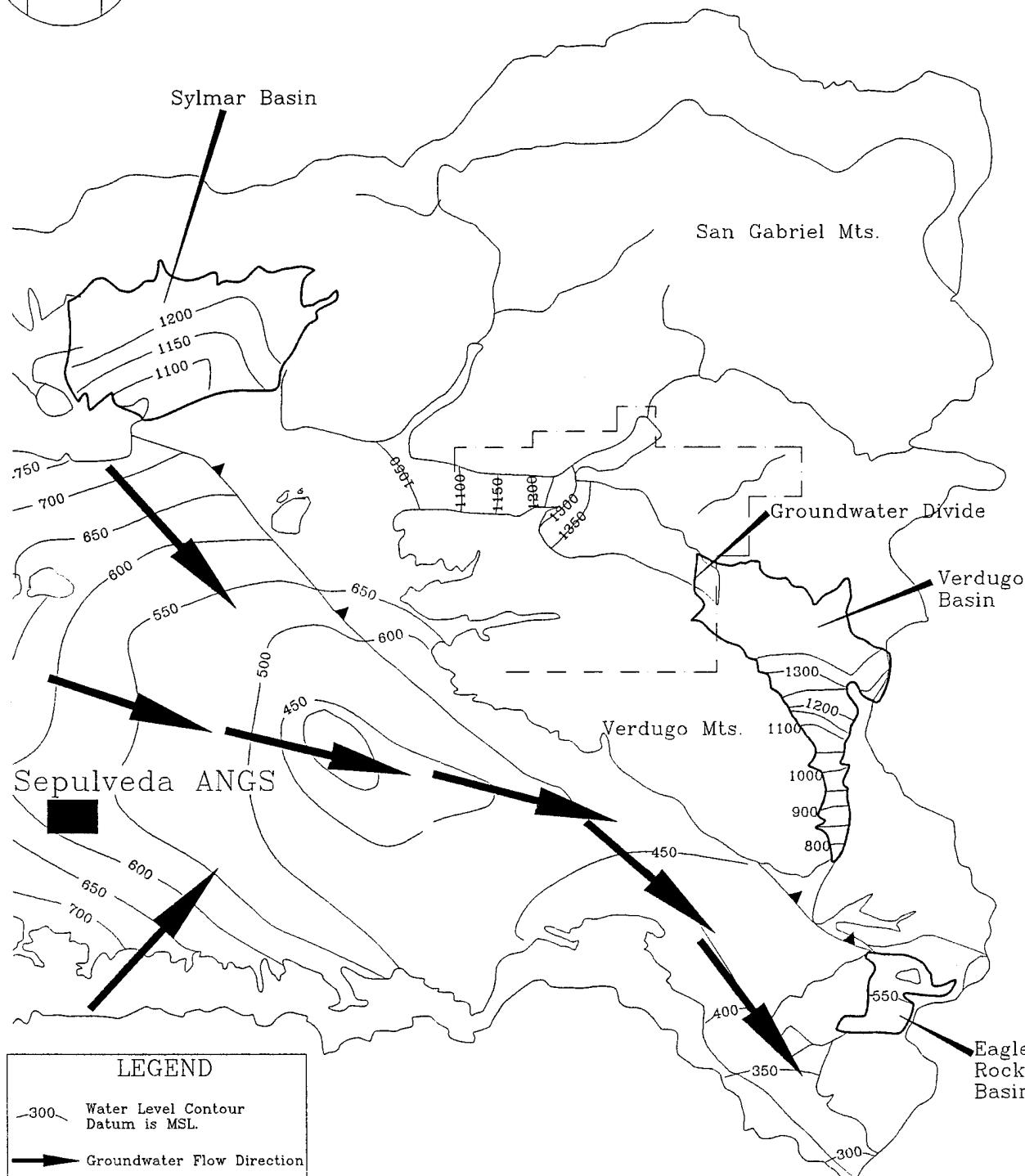
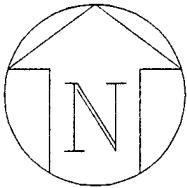
Regional groundwater measurements taken during Fall 1989 show flow direction is to the east-southeast towards the Eagle Rock Basin in the extreme southeastern portion of the ULARA (see Figure 3.4). Groundwater measurements taken in Spring of 1991 in two wells located three-quarters of a mile from Sepulveda ANGS indicate an interpreted groundwater elevation of approximately 570 feet above MSL (142 feet below land surface (BLS)) beneath the Station (Los Angeles County Department of Public Works, Hydraulic/Water Conservation Division) (see Figure 3.5). A map of individual water producers in the area surrounding Sepulveda ANGS is given as Figure 3.6.

3.4.2 Surface Water

Sepulveda ANGS is located in the Sepulveda Dam Recreational Area (Los Angeles River Flood Control Basin). Surface water is collected through storm drains and open ditches and then flows south into the Flood Control Basin (see Figure 3.7). The Station has been classified as located outside the 100-year flood plain of the Los Angeles River. Areal drainage in the vicinity of the Station is shown in Figure 3.8.

3.5 ENDANGERED FISH AND WILDLIFE

According to records maintained by the California Department of Fish and Game, Natural Diversity Database, no endangered or threatened species exist within a one-mile radius of the Station (Science and Technology Inc., 1991).



Modified after Blevins, M. L. Watermaster Service in the Upper Los Angeles River Area, Los Angeles County, Oct 1, 1988-Sept.30, 1989.

FIGURE 3.4 GROUNDWATER CONTOURS UPPER LOS ANGELES RIVER AREA, FALL 1989
 261st CCSQ, Sepulveda ANGS
 Van Nuys, California

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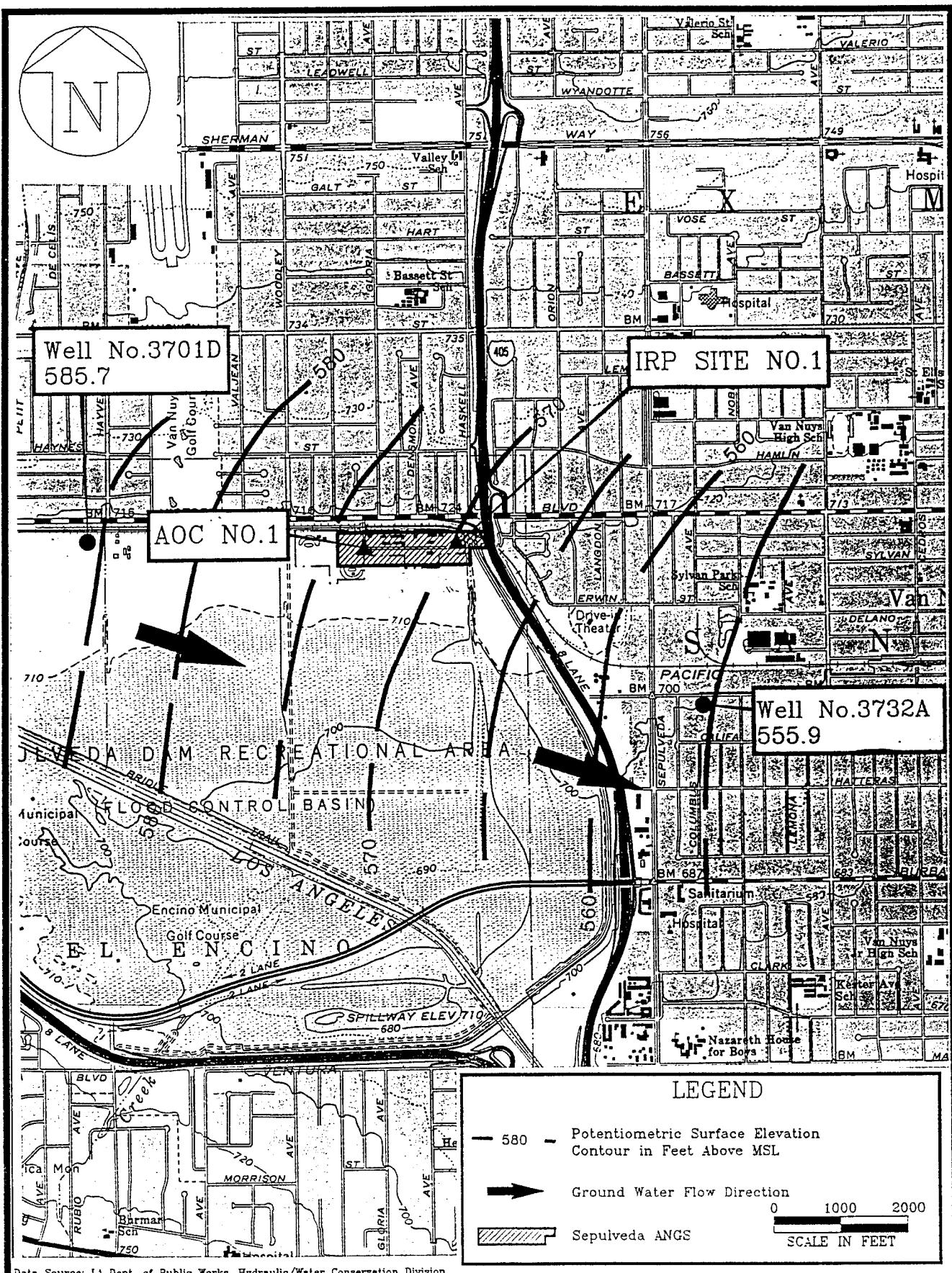
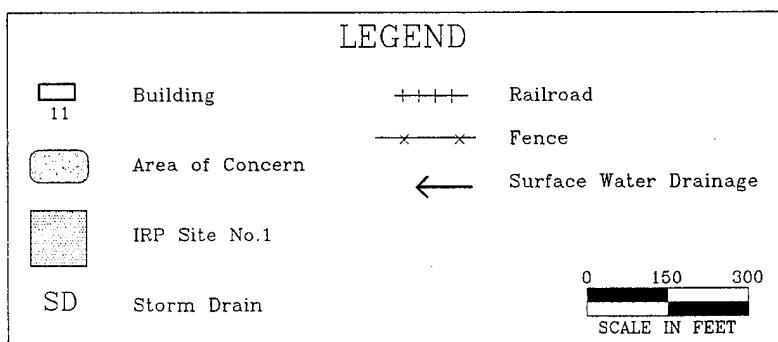
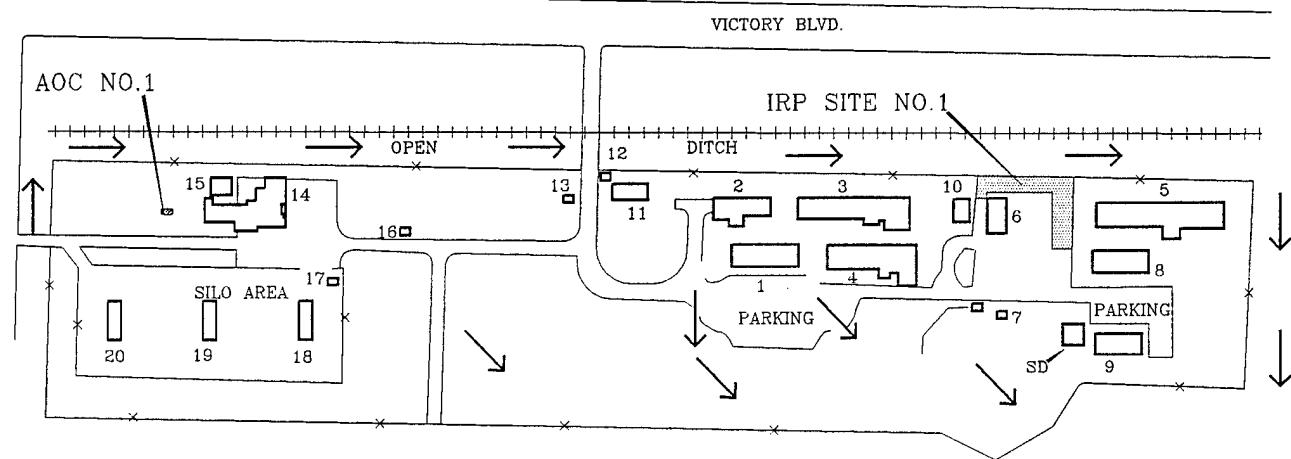
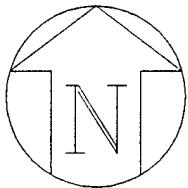


FIGURE 3.5

POTENTIOMETRIC SURFACE MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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SOURCE: SEPULVEDA ANGS PLAN, 1976 (MODIFIED).

FIGURE 3.7

SURFACE WATER
DRAINAGE MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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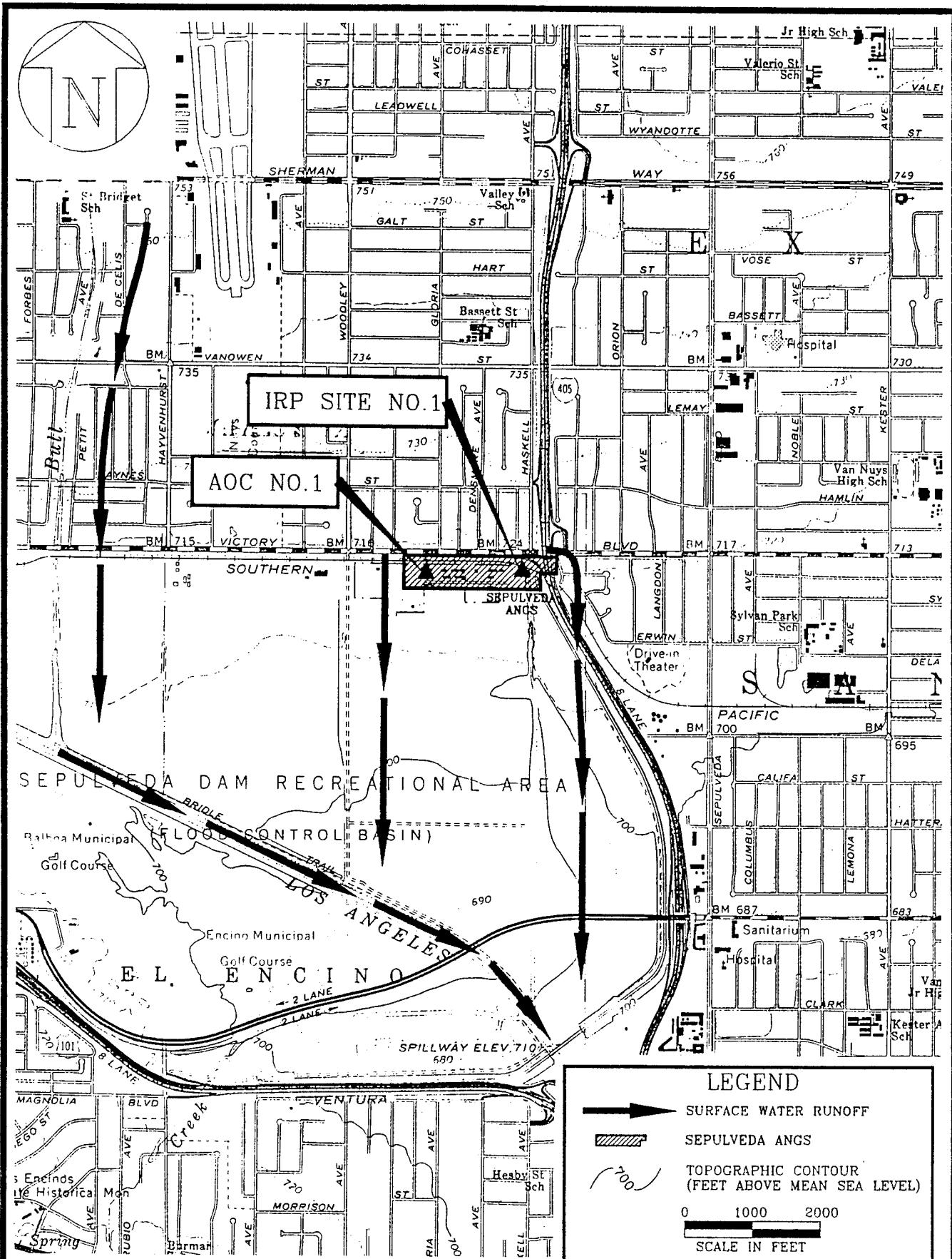


FIGURE 3.8

AREA SURFACE WATER
RUNOFF MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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SECTION 4.0 FIELD PROGRAM

The purpose of this SI was to confirm the presence or absence of contamination at IRP Site No. 1 and AOC No. 1, to attempt to determine the areal extent of any contaminants detected, and to provide data needed to reach a decision point for the sites. This section describes the field activities performed during the SI to accomplish the above objectives, and the methodologies used to conduct these activities. The field investigation at Sepulveda ANGS commenced on 6 June 1994 and was completed on 10 June 1994.

4.1 GENERAL INVESTIGATION APPROACH

The field investigation at Sepulveda ANGS used the Strataprobe™ System for both soil vapor and soil sampling in order to:

- Screen soil for contamination at IRP Site No. 1;
- Determine background soil conditions; and
- Collect soil samples at each site.

A soil vapor survey was conducted at IRP Site No. 1 prior to the commencement of soil sampling activities. The soil vapor survey was used at IRP Site No. 1 as a screening tool for determining the optimum number and location of soil sampling borings needed to confirm the absence or presence of soil contamination.

Soil sampling locations were installed at IRP Site No. 1 and AOC No. 1 to determine whether contamination exists at the sites, and if it does exist, to attempt to determine the nature and extent of the contamination. In addition, soil samples collected from a specifically located soil sampling location established background conditions applicable to the Station.

4.2 DEVIATIONS FROM THE WORK PLAN

There were deviations from the Work Plan. However, in no way did the changed procedures or protocols affect accomplishing the overall objectives of this site investigation which were: to confirm the presence or absence of contamination; to attempt to determine the areal extent of any contaminants detected; and to provide data needed to reach a decision point for the site.

The deviations from the Work Plan are described as follows:

- A photoionization detector (PID), rather than a flame ionization detector (FID), was used to field screen soil samples during sampling.
- Due to the low capacity of the split-spoons used for soil sampling, it was not possible to take an investigation sample and a duplicate from the same split-spoon. Duplicates were obtained by punching another hole adjacent to the sampling point and taking another sample from the same depth.
- Soil samples collected from background location BGLS01-11 were not analyzed for TPH, or oil and grease as specified in the Work Plan. Instead, soil samples were analyzed for pesticides and PCBs.
- Priority pollutant metals, with the exception of mercury and selenium, were analyzed by Method SW6020 rather than Methods SW6010 and SW7000 series as specified in the Work Plan. Method SW6020 is Resource Conservation and Recovery Act (RCRA) approved and attains comparable or lower reporting limits than those of Methods SW6010 and SW7000.
- Extra investigation soil samples were collected during the SI. Two additional samples were collected from IRP Site No. 1 and one additional sample was taken from AOC No. 1.
- Certain QA/QC samples listed in the Work Plan were not taken. Two equipment blanks and one MS/MSD were not collected. Since TPH, lead, and oil and grease were not detected at significant concentrations in equipment blanks, field blank data was not required to insure quality control for these analytes. The analytes of concern were either not detected or detected at extremely low levels in the equipment blanks that were obtained.
- Soil sampling locations, referred to in the Work Plan at IRP Site No. 1, were redesignated "sampling borings." Sampling boring SB-1 is analogous to SL01-01, SB-2 to SL01-02, and so forth.

4.3 FIELD SCREENING ACTIVITIES

4.3.1 Soil Vapor Survey

Prior to installation of soil sampling borings at IRP Site No. 1, a soil vapor survey was conducted at the site. Soil vapor surveying was used to identify the presence and to attempt to delineate the extent of BTEX and TPH contamination. The results were used as a screening tool for developing the optimum number and location of soil sampling borings needed to confirm and to attempt to delineate soil contamination.

The soil vapor survey was conducted by Transglobal Environmental Geochemistry (TEG), Solana Beach, California. A total of 15 sampling points formed a base grid with distances ranging from 25 to 60 feet between sampling points. Soil vapor sampling point coordinates were determined by a professional surveyor.

A probe, consisting of 5/8-inch stainless steel pipe fitted with 1/8-inch polypropylene nylaflow tubing and a reverse-threaded steel tip, was driven into the ground, to a maximum depth of 20 feet BLS, with an electric rotary hammer. Sampling points located through asphalt were driven into the ground with TEG's truck-mounted hydraulic/vibrational system. Soil vapor samples were collected at depths of 5, 10, 15, and 20 feet BLS from each sampling point to provide multiple depth vapor profiling. Once inserted to the desired depth, the probe was rotated in a clockwise direction, opening the tip and exposing the vapor sampling ports. Soil vapor was withdrawn from the nylaflow tubing using a syringe connected via an on-off valve. The first 40 cubic centimeters (cc) of vapor were discarded to flush the dead volume of the probe and fill it with *in-situ* soil vapor. After the next 20 cc of vapor were withdrawn into the syringe, the syringe was plugged, and transferred to the on-site Department of Health Services (DOHS)-certified mobile laboratory (CERT #1745) for analysis within 5 minutes of collection. Soil vapor samples were analyzed for TPH and BTEX using DOHS Modified USEPA Method 8015 and Method SW8020, respectively. Two field duplicates were collected to provide a quality assurance check on analytical procedures and results. Soil vapor survey results are fully discussed in Subsection 5.3.2.1 and included in Appendix A.

4.3.2 Soil Screening

Soil samples were screened in the field using a PID and field gas chromatograph. The soil samples collected were placed in plastic bags, and a Photovac HL MicroTip PID used to screen the headspace for photoionization compounds. The PID was calibrated at the start of each day

using 100 ppm isobutylene gas. All PID readings are indicated on the boring logs included in Appendix B. Soil was also field screened using a Photovac 10S55 Portable Gas Chromatograph (GC). The Photovac 10S55 Portable GC, calibrated to screen for benzene, toluene, and m,p-xylanes (BTX), was used to detect and quantify the presence of these compounds in the headspace from the soil samples collected. The GC could not be calibrated to screen for ethylbenzene and o-xylene because the GC failed to identify those peaks. Corrective action performed included a recalculation of the combined coeluted compound values for ethylbenzene and m,p xylene as a total mass tripled. The GC was standardized prior to use each day using a 1 ppm BTEX headspace standard which was prepared fresh daily by diluting a 2,000 ppm BTEX stock solution. Air blank samples were shot after each calibration with the BTEX headspace standard and between soil sampling locations.

Once the soil sample for laboratory analysis had been prepared, ambient temperature headspace analysis (ATHA) was conducted for the remaining soil. The remaining soil was placed in a plastic bag for 15 minutes and allowed to reach ambient air temperature. After 15 minutes, a headspace reading was collected using the PID. Headspace analysis was used as a tool to determine which sample intervals best characterized the environment of the soil sampling location or demonstrated the highest headspace reading. Data obtained from the field GC and PID were used to determine which soil samples were sent to the laboratory for analysis and to provide qualitative data on those samples not sent.

Field GC data is summarized in Section 5.0, and included in Appendix C.

4.4 CONFIRMATION ACTIVITIES

TEG, Solana Beach, California was retained as the contractor for installing soil sampling locations and collecting soil samples. The selected contractor mobilized personnel and equipment that met or exceeded California ANG, LARWQCB, and DTSC requirements.

Core Laboratories, Anaheim, California, was retained to perform chemical analyses. Provisions were made for proper sample containers, labels, chain-of-custody forms, sample stabilization and preservation, insulated sample shipping containers, and packing materials.

Engineering and Surveying, Inc., Los Angeles, California, was retained as the surveying contractor. The site boundaries, buildings, all soil vapor sampling points, and all soil sampling locations were surveyed. The land surface elevation of each sampling location is shown on the borehole logs included in Appendix B.

4.4.1 Soil Sampling Locations

Soil sampling locations were installed to obtain soil samples for analytical laboratory analysis for defining any existing soil contamination, to aid in defining the vertical and horizontal extent of detected contaminants at the sites, and to establish background soil conditions. Soil samples were also used for determining site geology and subsurface soil characteristics.

Soil sampling locations were installed and soil samples were collected using the Strataprobe™. The Strataprobe™ is a lightweight hydraulic drive point system. The direct push hydraulic unit consists of a rear-mounted, dual ram configuration mounted in conjunction with a vibrating component that is capable of producing high-frequency impact energy. The direct push hydraulic unit has a 5,000-pound static reaction weight and 15,000-pound pullback capacity.

The Strataprobe™ obtains discrete soil samples using a retractable piston sampler. The sampler consists of a standard split-spoon with a piston assembly added to control the sampling depth. Upon reaching the desired depth, the piston is unlocked and the sampler advanced one foot into the soil as the piston retracts. Samples are collected in standard brass retainer sleeves.

A total of 16 soil sampling locations: 10 located at IRP Site No. 1, five located at AOC No. 1, and one background, were installed for data collection. All work was performed in a manner consistent with LARWQCB and DTSC regulations. All soil sampling locations were installed to a depth of 20 feet BLS, with the exception of BGLS-01-11, AOCSL-02, and AOCSL-03, which were installed to a depth of 15 feet BLS. Soil samples were collected at 5-foot intervals for subsurface characterization and field screening. An 18-inch carbon steel standard split-spoon sampler equipped with three 6-inch brass sleeves was used for collecting soil samples for laboratory analysis from a depth of 6 inches BLS and from the bottom of the boring. Eleven additional investigative soil samples were collected for laboratory analysis as follows: one from the background sampling location; four from IRP Site No. 1; and six from AOC No. 1. The additional soil samples were obtained from intervals determined by the on-site geologist that, through field screening, best characterized the environmental conditions of the boring or registered the highest headspace reading. Actual sample depths submitted for laboratory analysis are discussed in Section 5.0 and shown on the borehole logs included in Appendix B. The split-spoon sampler was decontaminated and new, decontaminated brass sleeves inserted before each sampling event.

Soil sampling boring/location coordinates and ground elevation were determined by a professional surveyor.

4.4.2 Specific Media Sampling

This subsection summarizes the analytical program followed for soil samples collected during the site investigation to determine the nature, magnitude, and extent of contamination detected at the sites. Also included in this subsection is a discussion of quality control procedures followed during the field sampling activities.

4.4.2.1 Soil

Past activities indicated that suspected contamination at IRP Site No. 1 consists primarily of waste oils, hydraulic fluid, paints, and solvents. Therefore, the primary analytical program for IRP Site No. 1 focused on the detection of volatile organic compounds (VOCs) using Method SW5030/8240; semivolatile organic compounds (SVOCs) by Method SW3550/SW8270; priority pollutant metals by Method SW3050/SW6020, and mercury (SW3050/SW7471) and selenium (SW3050/SW7742/SW7741A); TPH both as gasoline and as diesel by Method SW5030/SW3550/Cal. Modified 8015; and oil and grease (O&G) by Modified Standard Method 5520 C.

Past activities indicated that suspected contamination at AOC No. 1 consists primarily of solvents, fuels, sulfuric acid, hydraulic fluid, motor oil, and various paints and thinners. Therefore, the primary analytical program for AOC No. 1 focused on the detection of VOCs, SVOCs, and priority pollutant metals, by methods previously described, and pesticides and PCBs by Method SW3550/SW8080, hydrazine by American Society of Testing and Materials (ASTM) Method D-1385, and sulfate by USEPA Method 375.3.

Soil samples collected from the background sampling location were analyzed for VOCs, SVOCs, priority pollutant metals, pesticides and PCBs, and sulfate, by methods previously described.

Table 4.1 summarizes the analytical program at each site.

4.4.2.2 Quality Control Of Field Sampling

Field duplicate samples and trip and equipment blanks were submitted to the analytical laboratory for assessment of the quality of data resulting from the field sampling program. Trip and equipment blank samples were analyzed to check for procedural contamination and ambient conditions at the site that may have caused sample contamination. Duplicate samples were submitted to provide a quality assurance check on analytical procedures and results.

Table 4.1
Laboratory Analyses Summary Table
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Site Location | Matrix | Field Parameters | Lab Parameters & Test Methods | Number of Field QA/QC Samples | | | | Matrix Totals |
|----------------|-------------------|--|--|-------------------------------|-------------|------------------|-----------------------|-----------------------|
| | | | | Investigating Samples | Trip Blanks | Equipment Blanks | Field Duplicate | |
| IRP Site No. 1 | Soil (Subsurface) | Field Screening using Field GC/PID Soil Classification | VOCs/SW8240 SVOCs/SW8270 TPH/Cal Mod. 8015 Metals/SW6020 ^a O&G/Mod. SM5520 C | 24 24 24 24 | | | 2 2 2 2 | 1 1 1 1 |
| AOC No. 1 | Soil (Subsurface) | Field Screening using Field GC/PID Soil Classification | VOCs/SW8240 SVOCs/SW8270 Pests/PCBs/SW8080 Metals/SW6020 ^a Sulfate/USEPA 375.3 Hydrazine/ASTM D-1385 | 16 16 16 16 16 | | | 2 2 2 2 2 | 1 1 1 1 1 |
| Background | Soil (Subsurface) | Field Screening using Field GC/PID Soil Classification | VOCs/SW8240 SVOCs/SW8270 Pests/PCBs/SW8080 Metals/SW6020 ^a Sulfate/USEPA 375.5 | 3 3 3 3 | | | | 3 3 3 3 |

^aTrip and Equipment Blanks are not counted in Matrix Totals.

QAQC – Quality Control/Quality Assurance.

MS/MSD – Matrix Spike/Matrix Spike Duplicate.

VOCS – Volatile Organic Compounds.

SVOCs – Semivolatile Organic Compounds.

Pests – Pesticides.

PCBs – Polychlorinated Biphenyls.

O&G – Oil and Grease.

^aWith the exception of mercury (SW 7471) and selenium (SW 7742/SW7741A).

The level of the quality control effort included one field duplicate for every 10 investigative soil samples. One VOC analysis trip blank, consisting of distilled, deionized, ultra pure water, was included along with each shipment of samples. One matrix spike/matrix spike duplicate was collected for every 20 investigative soil samples. Matrix samples provide information about the effect of the sample matrix on the analytical methodology.

Soil Sample Preservation

Soil samples submitted for laboratory analysis collected with a standard split-spoon sampler were contained in brass sleeves. Immediately upon removal from the sampler, the sleeve ends were covered with a Teflon™ barrier, aluminum foil, and fitted with a plastic cap. Prepared samples were placed in sealed zip-lock plastic bags and immediately placed on ice within an ice chest and maintained at a temperature of 4° C.

Water Sample Preservation

VOC and TPH samples were preserved with no more than 2 drops of a 1:1 solution of hydrochloric acid per 40-milliliter glass vial having a Teflon™-lined lid. SVOC samples were stored in 1-liter amber glass bottles having Teflon™-lined lids, and no preservatives. Total recoverable metal samples were stored in 1-liter high density polyethylene bottles with Teflon™-lined lids, and preserved with a solution of 1:1 nitric acid to achieve a pH of less than 2. Oil and grease samples were stored in 1-liter amber glass bottles having Teflon™-lined lids, and preserved with sulfuric acid.

4.5 INVESTIGATION DERIVED WASTE

During the SI, a certain amount of waste material (personal protective equipment (PPE), and decon water) were produced as a result of investigative activities. No drill cuttings were produced during soil sampling activities with the Strataprobe™. Decon water was disposed into the oil/water separator located in the former vehicle maintenance area.

Miscellaneous derived wastes (e.g., gloves, visqueen sheeting, and wipes) were drummed in one steel, plastic-lined 55-gallon drum. This drum should be disposed through DRMO. PPE and visqueen came in contact with soils having lead and TPH concentrations exceeding background values.

5.0 INVESTIGATIVE FINDINGS

5.1 STATION-WIDE GEOLOGIC AND HYDROLOGIC INVESTIGATION RESULTS

Soil sampling locations installed during the SI, and two previously drilled soil borings, show light brown to dark brown clayey silt and sandy silt to be the predominant lithology of the uppermost 50 feet of unconsolidated sediments underlying Sepulveda ANGS. Geologic cross-section A-A', depicting the subsurface geology, is indexed on Figure 5.1 and shown in Figure 5.2.

5.2 BACKGROUND SAMPLING RESULTS

5.2.1 Background Sampling Location

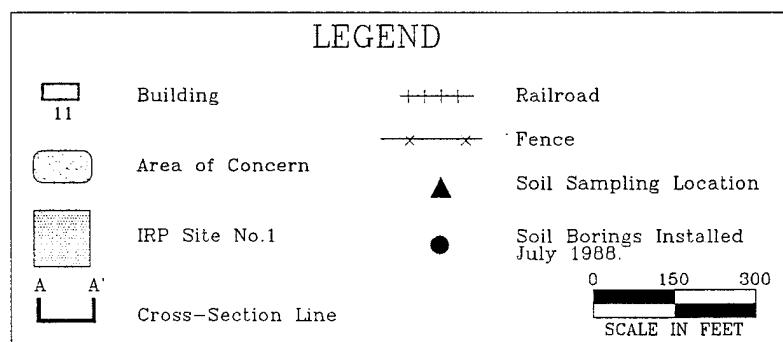
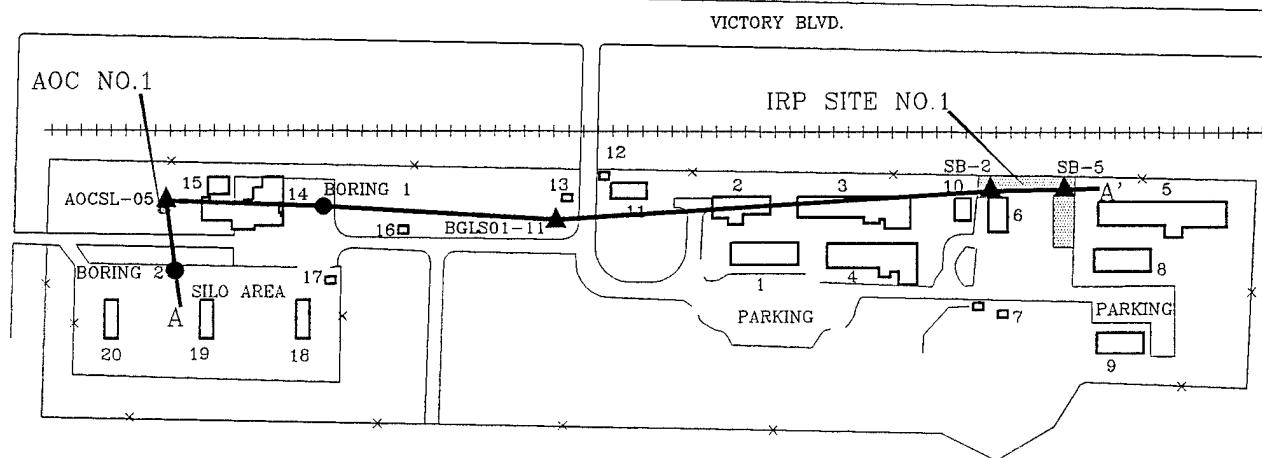
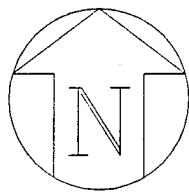
Background data at Sepulveda ANGS consisted of one soil sampling location, BGLS-01-11, which was used to obtain soil samples. Soil sampling location BGLS-01-11 is located approximately 790 feet west of IRP Site No. 1, 700 feet east of AOC No. 1, and 35 feet southwest of Building 13, as indicated on Figure 5.3. This location was selected because it is away from any known or suspected Station sources of contamination.

5.2.2 Background Sampling

Soil samples were collected for laboratory analysis from background sampling location BGLS-01-11 to determine naturally occurring concentration levels, and contaminant or chemical concentrations already existing in the area due to general environmental conditions. Analytical results obtained during this sampling represent background conditions against which contaminant concentrations detected at IRP Site No. 1 and AOC No. 1 will be compared and the significance of detected contamination determined.

5.2.2.1 Soil Sampling Results

Background soil boring BGLS-01-11 was drilled and soil samples collected to a depth of 21 feet BLS on 10 June 1994. A brown clayey silt was the predominant lithology encountered in the boring from surface to total depth. Below 7.5 feet BLS, some sand was observed in the clayey silt. No saturated conditions were encountered.



SOURCE: SEPULVEDA ANGS PLAN, 1976 (MODIFIED).

FIGURE 5.1

SEPULVEDA\SEPU1-2L

LOCATION OF GEOLOGIC
CROSS-SECTION A-A'
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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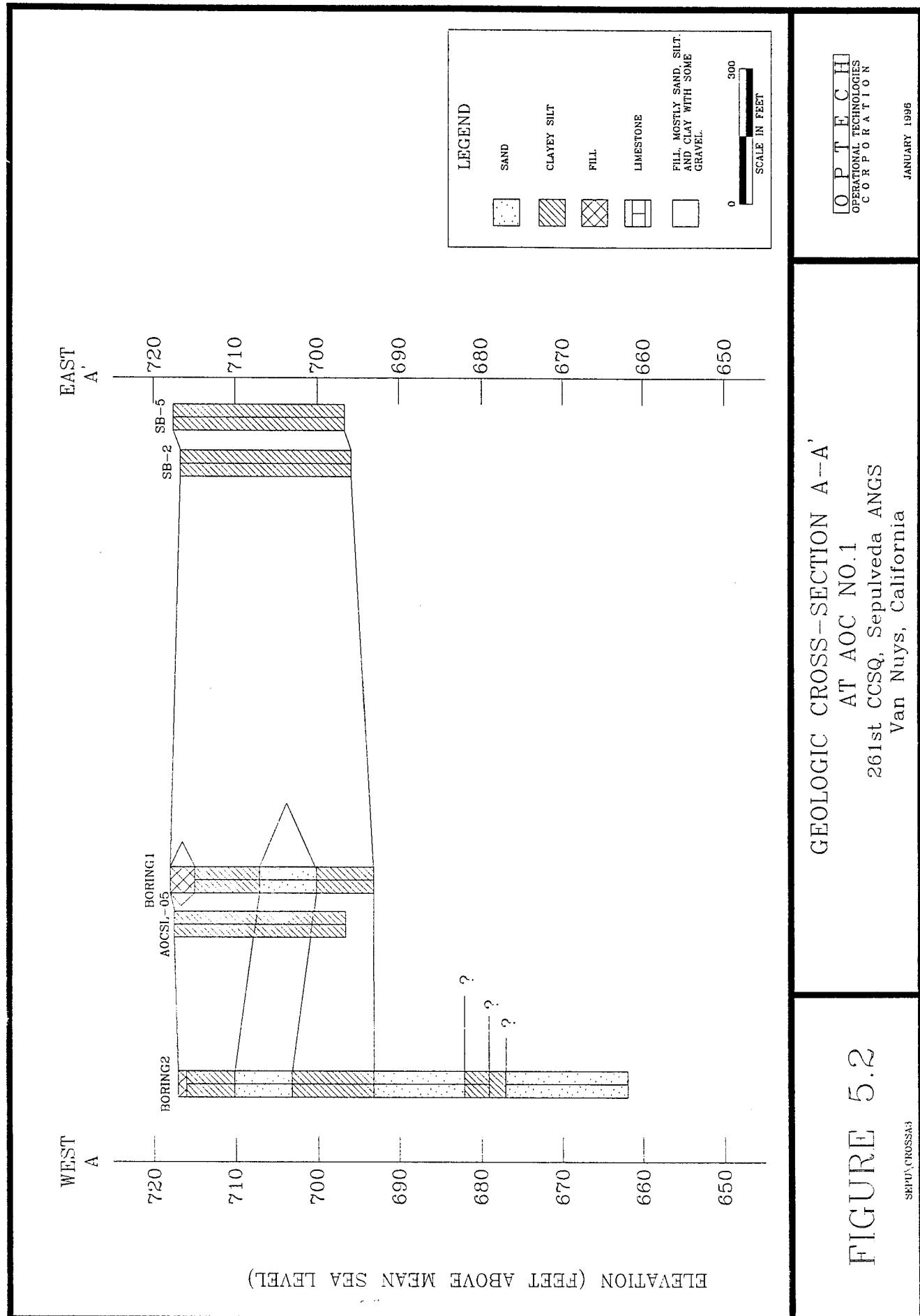
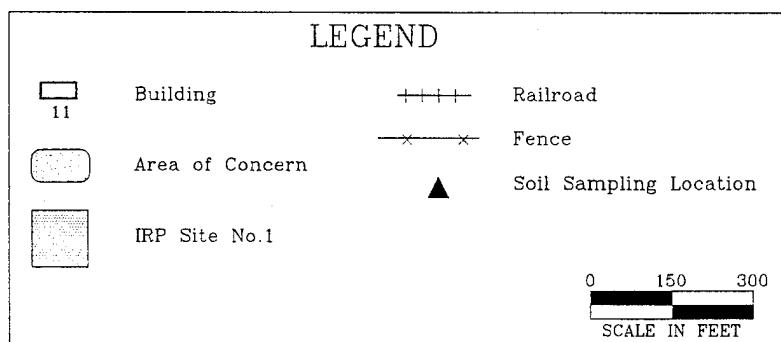
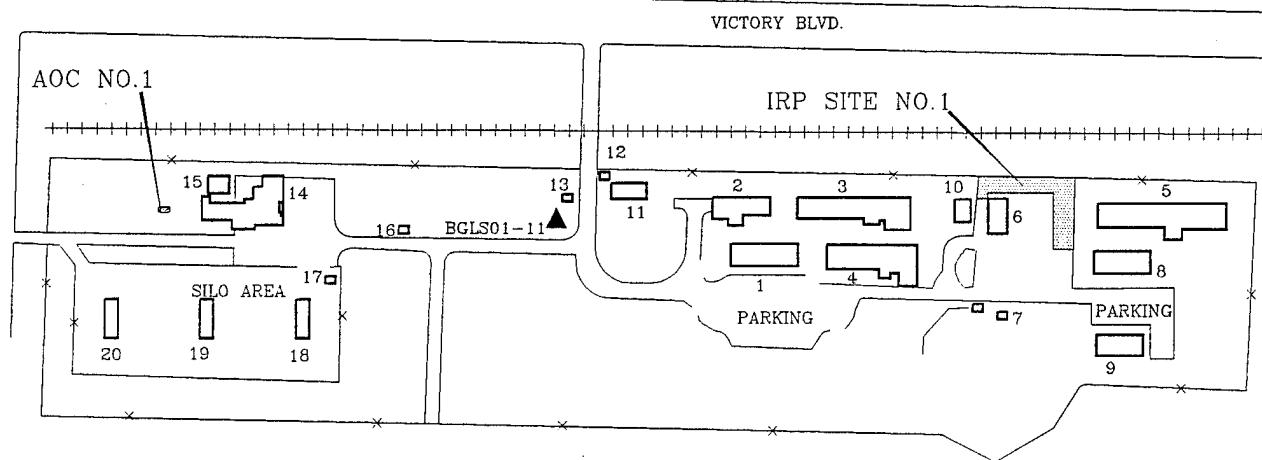
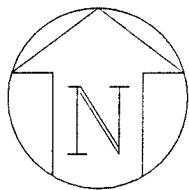


FIGURE 5.2

AT AOC NO. 1
2611st CCSQ, Sepulveda ANGS
Van Nuys California

JANUARY 1996



SOURCE: SEPULVEDA ANGS PLAN, 1976 (MODIFIED).

FIGURE 5.3

BACKGROUND SAMPLING
LOCATION
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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Three investigative soil samples were collected for laboratory analysis. Sampling depths and the analytical program are indicated on Table 5.1.

VOC and pesticide surrogate recoveries ranged from 94 to 109 percent and 36 to 127 percent, respectively, which are within acceptable limits. SVOC surrogate recoveries ranged from 80 to 102 percent, which are within acceptable limits, except for sample BGLS01-11-6" which is outside of quality control limits due to matrix effects. Quality assurance/quality control sample analytical results are reported in Appendix D.

Soil samples collected from depths of 10 feet BLS and 15 feet BLS were field screened with a Photovac 10S55 Portable GC, calibrated to screen for BTX. The GC could not be calibrated to screen for ethylbenzene, as previously discussed in Section 4.3.2. Toluene and m,p-xylenes were detected at concentrations of 0.0009 ppm and 0.0001 ppm, respectively, in the soil sample collected from a depth of 10 feet BLS, and at 0.0065 ppm and 0.00004 ppm, respectively, in the soil sample collected from a depth of 15 feet BLS.

Table 5.1 summarizes the analytes detected in soil samples collected from background sampling location BGLS-01-11. A complete listing of the results for all analytical parameters for each sample is given in Appendix E.

The VOC methylene chloride was detected at concentrations ranging from .015 to .026 ppm in the three background samples collected. Methylene chloride was also detected in the associated trip blank and equipment blank (designated as rinsate #1); the ASTM Type I reagent water used in the collection of the equipment blank had been obtained from the contract laboratory. Therefore, methylene chloride does not represent a background contaminant, but rather laboratory-induced contamination.

No SVOCs or pesticides/PCBs were detected in the background soil samples.

Sulfate was detected at a concentration of 35 ppm in the soil sample collected from a depth of 6 inches BLS, but was not detected in the samples collected below that depth.

Several of the priority pollutant metals analyzed were detected in soil samples collected from the background sampling location (see Table 5.1). Arsenic, cadmium, copper, and nickel were detected at concentrations ranging from 0.89 to 2.0 ppm, 0.84 to 0.89 ppm, 11.0 to 14.0 ppm, and 10.0 to 18.0 ppm, respectively, with the highest concentrations detected in the soil sample

Table 5.1
Analytes Detected in Background Soil Samples
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Sample ID Number | Methylene Chloride (ppm) | Sulfate (ppm) | Arsenic (ppm) | Cadmium (ppm) | Chromium (ppm) | Copper (ppm) | Lead (ppm) | Nickel (ppm) | Zinc (ppm) | Mercury (ppm) |
|------------------|--------------------------|---------------|---------------|---------------|----------------|--------------|------------|--------------|------------|---------------|
| BGLS01-111-6" | .026 | 35 | 1.8 | 0.84 | 9.5 | 11.0 | 4.6 | 12.0 | 30.0 | 0.010U |
| BGLS01-111-5' | .015 | 10U | 2.0 | 0.89 | 13.0 | 14.0 | 4.2 | 18.0 | 38.0 | 0.015 |
| BGLS01-111-15' | .026 | 10U | 0.89 | 0.500U | 13.0 | 12.0 | 4.3 | 10.0 | 39.0 | 0.019 |

BGLS - Background Location Sample.

ppm - parts per million.

U - Compound was analyzed for but not detected. Number preceding the "U" indicates the detection limit.

collected from a depth of 5 feet BLS. Chromium was detected at concentrations ranging from 9.5 to 13.0 ppm, with the highest concentrations detected in the soil samples collected from depths of 5 feet BLS and 15 feet BLS. Lead was detected at concentrations ranging from 4.2 to 4.6 ppm, with the highest concentration detected in the soil sample collected from a depth of 6 inches BLS. Zinc and mercury were detected at concentrations ranging from 30.0 to 39.0 ppm and 0.015 to 0.019 ppm, respectively, with the highest concentrations detected in the soil sample collected from a depth of 15 feet BLS.

5.3 IRP SITE NO. 1 (AREA BEHIND VEHICLE MAINTENANCE) FINDINGS

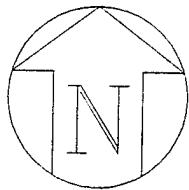
IRP Site No. 1 is located on the northeast side of Sepulveda ANGS behind the Motor Pool (Building 6) and along the boundary fence line. This site is L-shaped, extending approximately 190 feet east along the boundary fence line, then 110 feet to the south as shown in Figure 5.4. The site is covered with soil and vegetation, with the exception of the southern extension, which is covered with asphalt. This asphalted area was the site of the former vehicle maintenance ramp. A 6-foot-high security fence bounds the site to the north.

A 600-gallon capacity oil/water separator is located in the wash rack area east of Building 6 (see Figure 5.4). The oil/water separator is constructed of concrete and was installed in 1955. Although currently in use, the oil/water separator is scheduled for removal during fiscal year 1995. The locations of gas, water, electrical, and sanitary sewer lines are shown on Figure 5.5.

5.3.1 Geologic and Hydrologic Investigation Results

Soil samples collected from ten soil sampling borings were used to provide geologic information for describing the subsurface geology at IRP Site No. 1. Complete lithologic logs for the holes installed during this investigation are presented in Appendix B.

A brown clayey silt was the predominant lithology encountered in soil borings from surface to total depth. Some sand was encountered in the borings from between 7.5 to 17.5 feet BLS to the total depth. No saturated conditions were encountered. Geologic cross-sections depicting the subsurface geology are indexed on Figure 5.6 and shown in Figures 5.7 and 5.8.



RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO.1

BLDG
10

BLDG. 6

OIL/WATER
SEPARATOR

BLDG. 5

BLDG. 8

FORMER VEHICLE MAINTENANCE RAMP

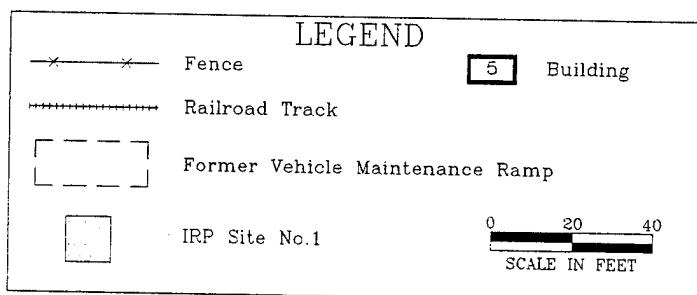


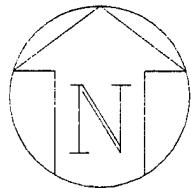
FIGURE 5.4

SEPULVED\SEP02-31

IRP SITE NO.1 SITE MAP
261st CCSQ, Sepulveda ANGS
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RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO.1

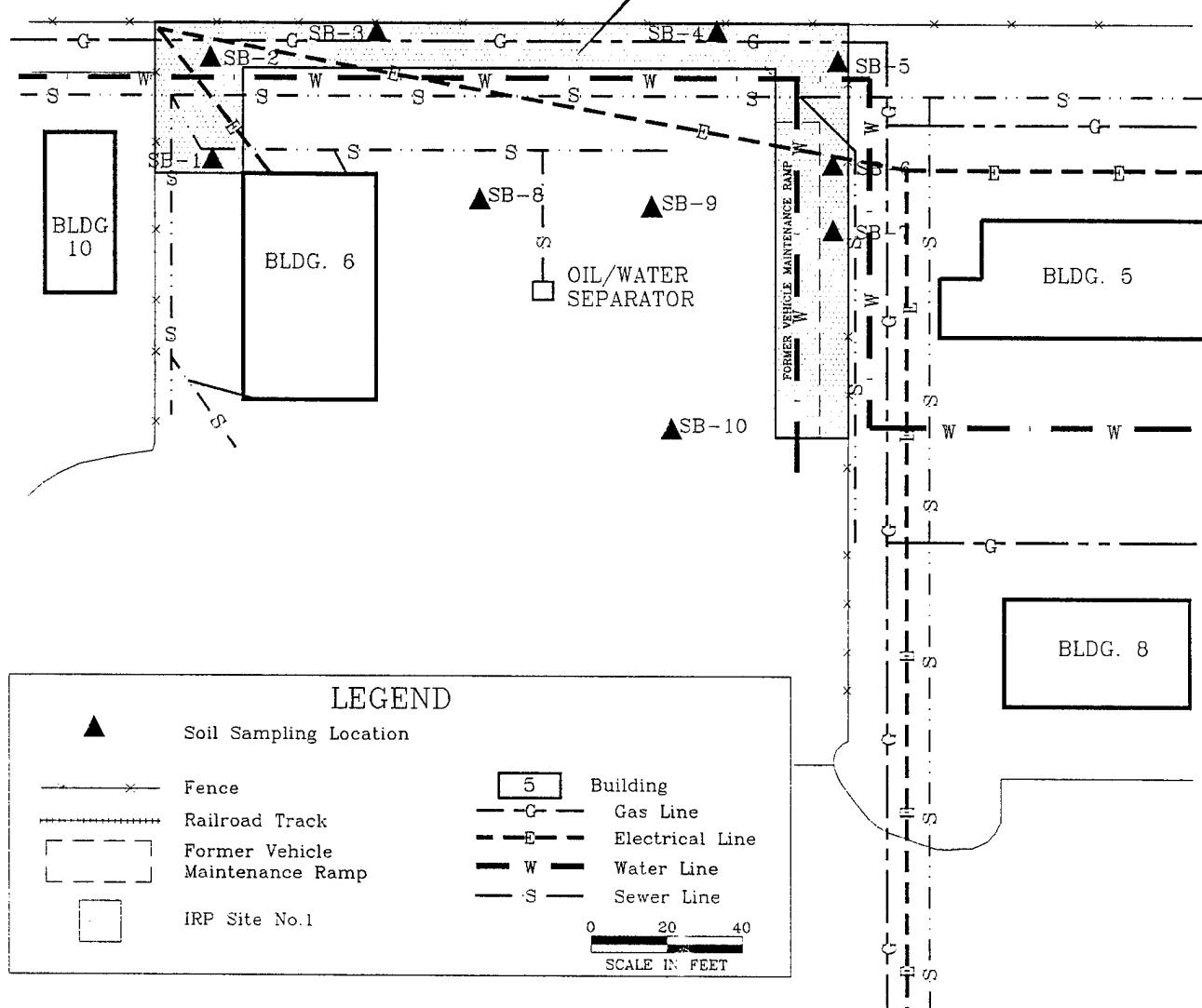


FIGURE 5.5

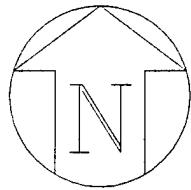
LOCATION OF UNDERGROUND UTILITIES AT IRP SITE NO.1

SEPULVED\SEPU5-12

261st CCSQ, Sepulveda ANGS
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RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO.1

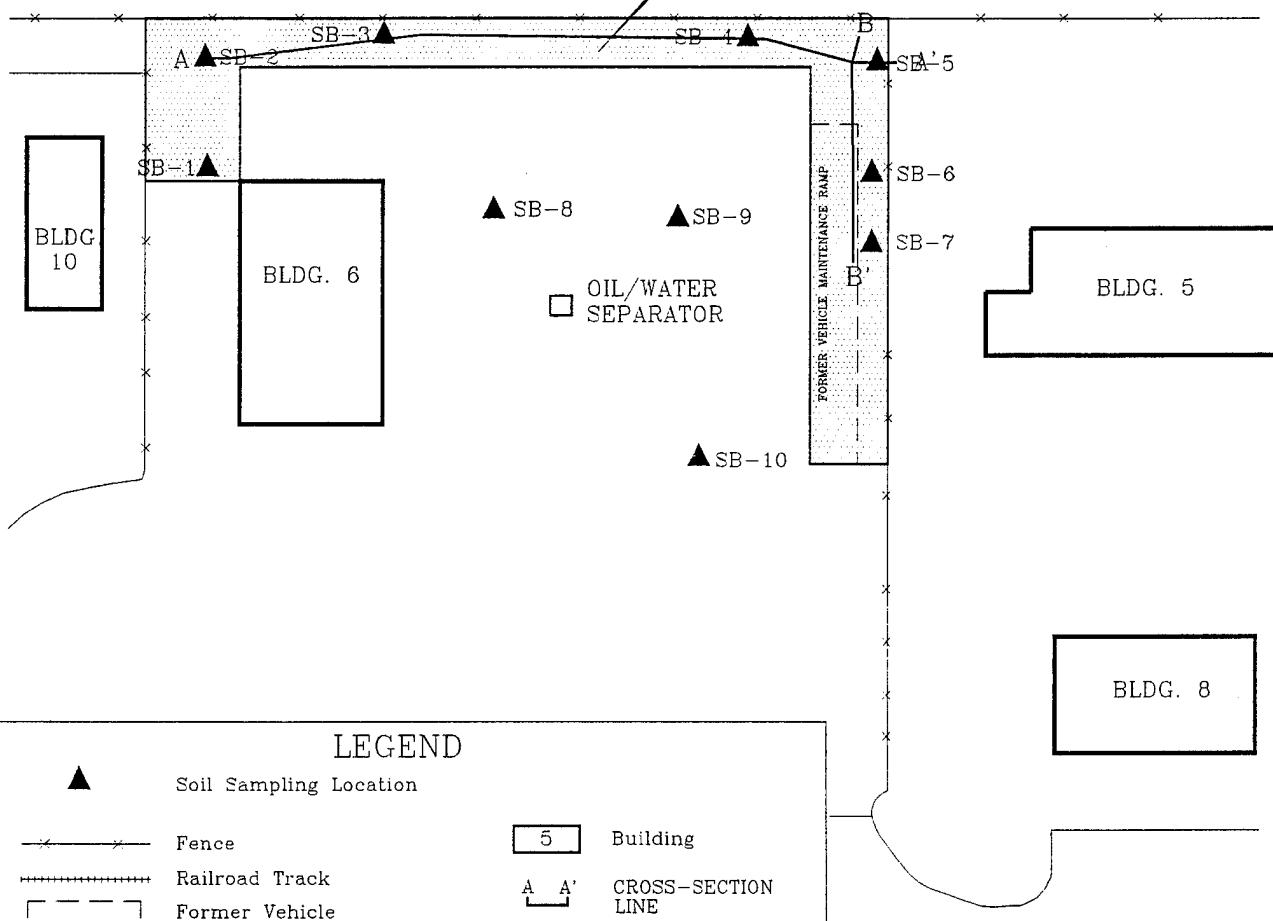


FIGURE 5.6

SEPULVEDA\SEPUS-12

LOCATION OF GEOLOGIC
CROSS-SECTIONS A-A' & B-B'

261st CCSQ, Sepulveda ANGS
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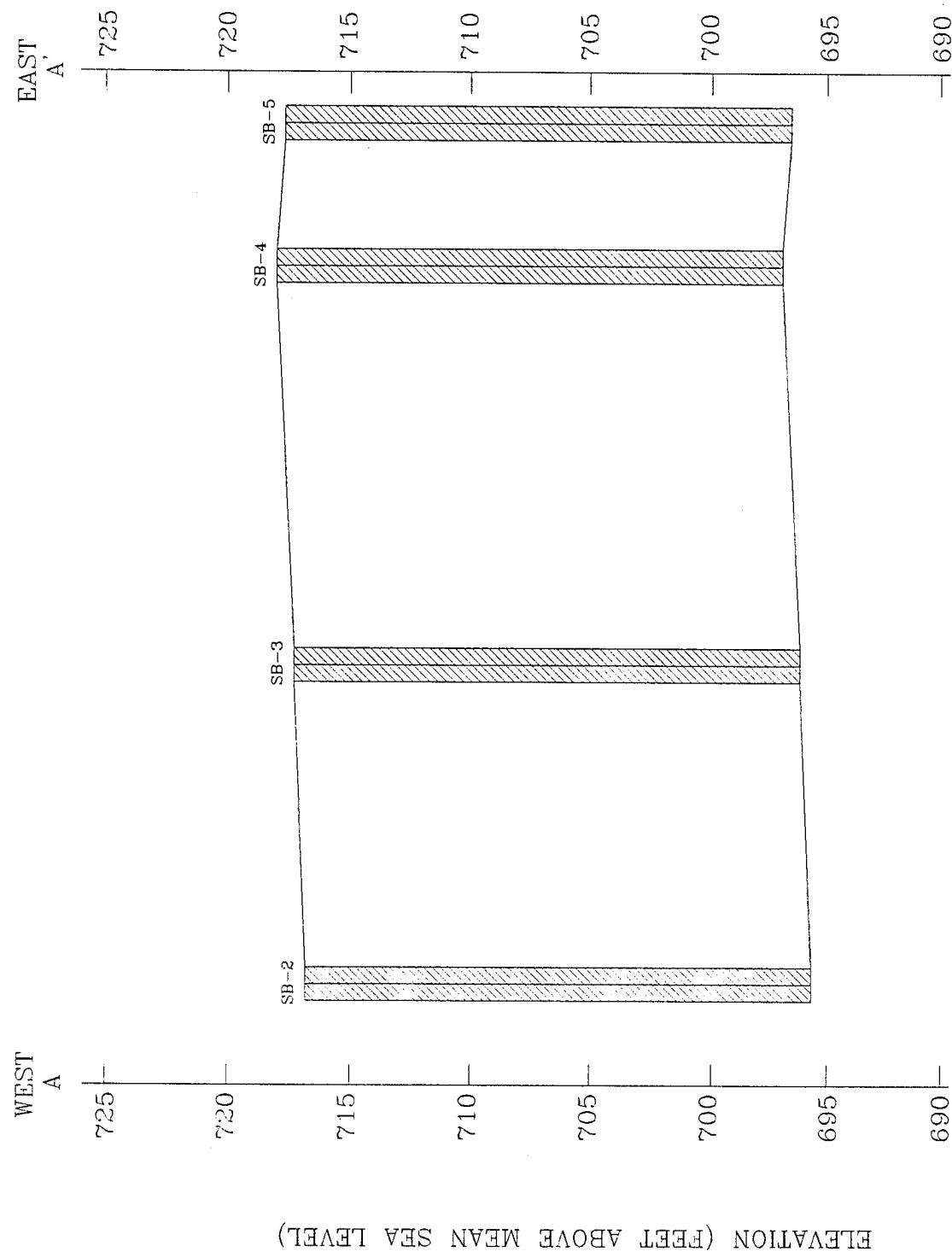
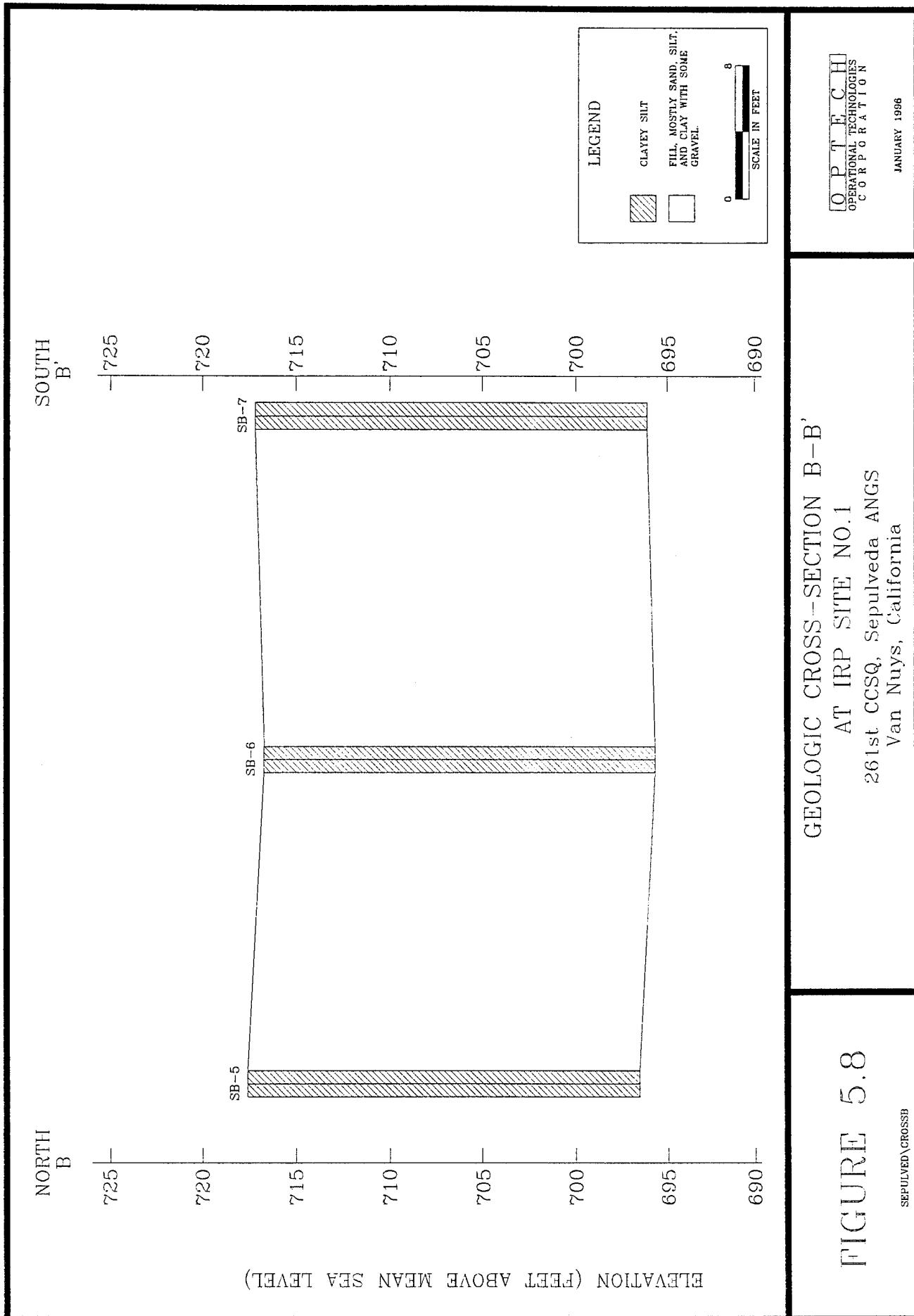


FIGURE 5.7

GEOLOGIC CROSS-SECTION A-A'
AT IRP SITE NO. 1
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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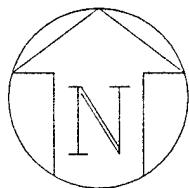
5.3.2 Screening Activities Results

5.3.2.1 Soil Vapor Survey Results

A soil vapor survey was conducted by TEG on 6 and 7 June 1994. A total of 15 sampling points formed a base grid with distances ranging from 25 to 60 feet between sampling points. Originally proposed sampling locations, with the exception of sampling locations number 1 and 8, were found to interfere with buried utilities and were relocated as closely as possible to their originally proposed locations. Proposed sampling location number 8 was found to be located outside Sepulveda ANGS property and, subsequently, was relocated within the area under investigation. As the soil vapor survey progressed, sampling location number 1 was found to be located outside of non-detect readings and was relocated within the site where further delineation was needed. The locations of soil vapor sampling points are illustrated on Figure 5.9.

Soil vapor samples were obtained from depths of 5, 10, 15, and 20 feet BLS from each sampling location, with the exception of locations number 1, 3, 7, and 9. Soil vapor samples were obtained from depths of 5, 10, and 15 feet BLS from sampling location number 1; 5, 10, and 20 feet BLS from sampling locations number 3 and 9; and 7 feet BLS from sampling location number 7. The clayey soil matrix prevented the collection of soil vapor from all proposed sampling depths at these locations. Fifty-four investigative samples and two duplicate samples were collected. Samples were analyzed for TPH and BTEX using DOHS Modified USEPA Method 8015 and Method SW8020, respectively. Table 5.2 summarizes the maximum concentration detected and the detection limit for each analytical parameter. A complete listing of the soil vapor survey results is given in Appendix A. Results obtained from the soil vapor survey were used to select the soil sampling boring locations at IRP Site No. 1.

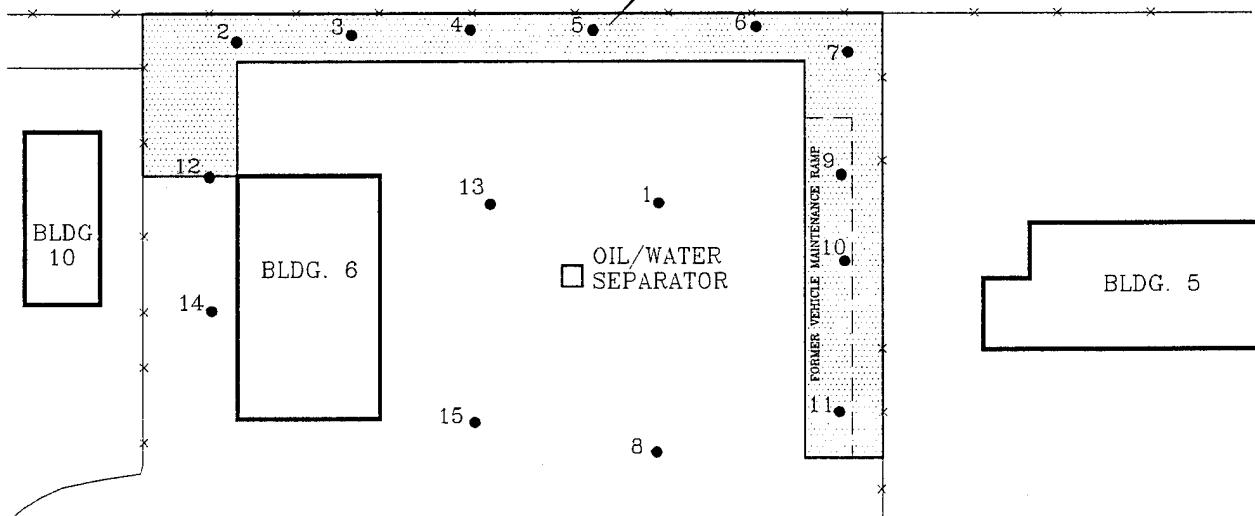
Benzene was detected at concentrations ranging from 1.36 to 3.86 parts per million volume (ppmV) in three of the 56 samples analyzed, TPH from 3 to 1,854 ppmV in 19 of the samples, and methane from 2 to 16,062 ppmV in all 56 samples analyzed. Total xylenes were detected at a concentration of 1.20 ppmV in one of the 56 samples analyzed; toluene and ethylbenzene were not detected in any of the soil vapor samples collected. The highest concentrations of detected parameters were in soil vapor samples collected from sampling locations number 5 and 6, located along the fence line immediately north of the site (see Figure 5.9). Both locations are within the area formerly used for the disposal of waste oils, hydraulic fluid, and small amounts of paint and solvents.



RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO.1



LEGEND

10 • Soil Vapor Sampling Point

—x—x— Fence

5 Building

—·—·— Railroad Track

[---] [---] Former Vehicle Maintenance Ramp

[] IRP Site No.1

0 20 40
SCALE IN FEET

FIGURE 5.9

SOIL VAPOR SAMPLING
LOCATIONS AT IRP SITE NO.1
261st CCSQ, Sepulveda ANGS
Van Nuys, California

SEPULVEDA\SEPU6-6P

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Benzene was detected in soil vapor samples collected from sampling locations number 5 and 6. Benzene was detected at a concentration of 1.99 ppmV in the sample collected from sampling location number 5 from a depth of 5 feet BLS, and at concentrations of 3.86 ppmV and 1.36 ppmV from sampling location number 6 from depths of 5 feet BLS and 10 feet BLS, respectively. Total xylenes were detected at a concentration of 1.20 ppmV in the soil vapor sample collected from sampling location number 1 from a depth of 5 feet BLS.

Table 5.2
Maximum Concentrations Detected in Soil Vapor Survey
261st CCSQ, Sepulveda ANGS, Van Nuys, California

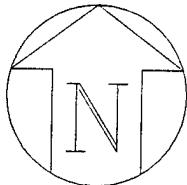
| Analytical Parameter | Maximum Concentration Detected (ppmV) | Detection Limit (ppmV) |
|------------------------------|---------------------------------------|------------------------|
| Benzene | 3.86 | 0.5 |
| Total Xylenes | 1.20 | 0.5 |
| Total Petroleum Hydrocarbons | 1,854 | 1.0 |
| Methane | 16,062 | 1.0 |

ppmV – parts per million volume.

The highest concentrations of TPH were detected in soil vapor samples collected from a depth of 5 feet BLS. TPH concentrations were found to decrease with depth. The highest concentrations of TPH were detected in the samples collected from sampling locations number 5 and 6 from a depth of 5 feet BLS; TPH was detected at concentrations of 1,658 ppmV and 1,854 ppmV, respectively. TPH was detected at concentrations of 678 ppmV, 346 ppmV, 271 ppmV, and 131 ppmV in samples collected from a depth of 5 feet BLS from sampling locations number 4, 1, 13, and 3, respectively. The areal extent of TPH detected by the soil vapor survey is illustrated in Figure 5.10.

Methane was detected at concentrations ranging from 2 to 16,062 ppmV in all soil vapor samples collected. The highest concentrations were detected in soil vapor samples collected from a depth of 5 feet BLS. Methane concentrations were generally found to decrease with depth. High concentrations of methane were detected in all samples collected from sampling locations number 1, 3, 4, 5, 6, 9, and 13. Sampling locations number 3, 4, 5, and 6 are located along the fence line within the area formerly used for waste disposal. Sampling location number 9 is located in the area of the former vehicle maintenance ramp. Sampling locations number 1 and 13 are located in the area south and west of IRP Site No. 1.

Methane was detected at concentrations ranging from 8,950 to 16,062 ppmV in samples collected from sampling location number 6, from 6,527 to 14,685 ppmV from sampling location



RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO.1

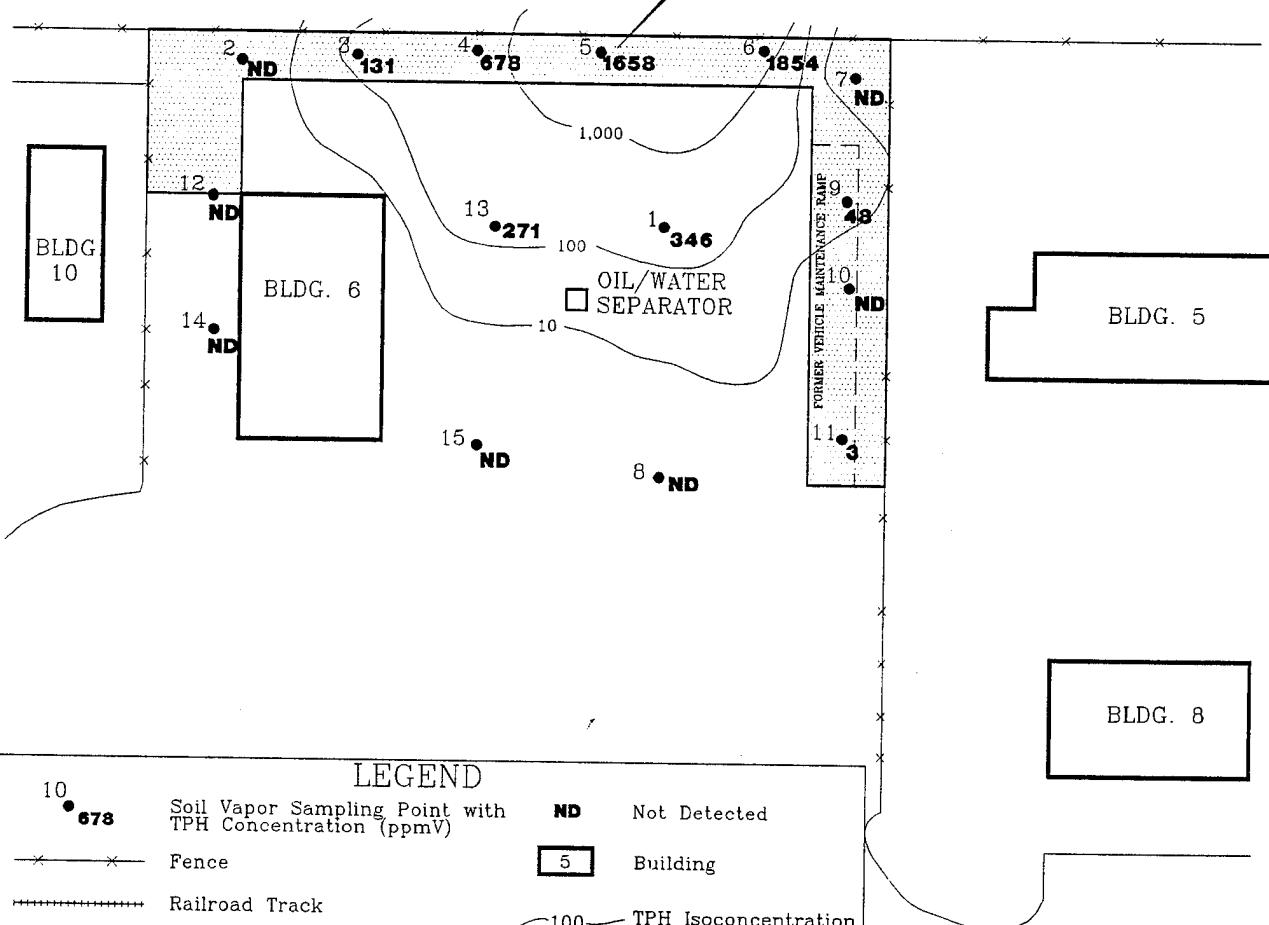


FIGURE 5.10

SEPULVEDA\SEP6-6P

ISOCON OF TPH CONCENTRATIONS
(ppmV) AT 5 FT. BLS DETECTED
DURING SOIL VAPOR SURVEY
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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number 5, from 8,073 to 12,582 ppmV from sampling location number 4, from 9,209 to 10,660 ppmV from sampling location number 1, from 6,064 to 10,632 ppmV from sampling location number 13, from 223 to 10,225 ppmV from sampling location number 3, and from 1,079 to 8,617 ppmV in samples collected from sampling location number 9. The highest concentrations detected at each sampling location were in the soil vapor samples collected from a depth of 5 feet BLS. The corresponding high levels of TPH and methane concentrations are indicative of microbiological degradation. The areal extent of methane detected by the soil vapor survey is illustrated in Figure 5.11.

5.3.2.2 Field GC Screening Results of Soil Samples

Thirty-six soil samples were field screened with a Photovac 10S55 Portable GC, calibrated to screen for BTX. The GC could not be calibrated to screen for ethylbenzene, as previously discussed in Section 4.3.2. Table 5.3 summarizes the maximum concentrations detected in soil samples collected from IRP Site No. 1. Complete GC data is included in Appendix C.

Table 5.3
Maximum GC Concentrations Detected in Soil Samples
Collected from IRP Site No. 1
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Compound | Maximum Concentrations Detected in Soil Samples (ppm) |
|------------|---|
| Total BTX | 0.2315 |
| Benzene | 0.1375 |
| Toluene | 0.103 |
| M,p-xlenes | 0.0268 |

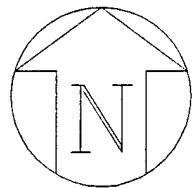
GC - Gas Chromatograph.

ppm - parts per million.

BTX - Benzene, toluene, and m,p-xlenes.

Total BTX was detected at concentrations ranging from 0.0004 to 0.2315 ppm in 34 of the 36 soil samples analyzed, benzene from 0.0011 to 0.1375 ppm in three of the samples, toluene from 0.0013 to 0.103 ppm in 30 of the samples, and m,p-xlenes from 0.0003 to 0.0268 ppm in 16 of the samples.

The highest concentrations of total BTX and benzene were detected in the soil sample collected from sampling boring SB-6 from a depth of 5 feet BLS. Toluene was also detected at a



RAILROAD TRACK

DRAINAGE DITCH

✓ IRP SITE NO.1

BLDC

BLDG. 6

BLDG. 5

BLDG. 8

LEGEND

10

LEGEND

5

Building

Railroad Track

100-

Methane Isoconcentration Contour

1

Former Vehicle Maintenance Ramp

10

CONTOUR INTERVAL IS LOGARITHMIC

A horizontal scale bar with numerical markings at 0, 20, and 40. The bar is divided into four equal segments by these markings. The segment between 0 and 20 is shaded black, while the segments between 20 and 40, and beyond 40, are white. Below the scale bar, the text "SCALE IN FEET" is printed in a bold, sans-serif font.

FIGURE 5.11

SEPULVEDA\SEPU6-6P

ISOCON OF METHANE
CONCENTRATIONS (ppmV) AT 5 FT. BLS
DETECTED DURING SOIL VAPOR SURVEY
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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concentration of 0.094 ppm in the same sample. Sampling boring SB-6 is located in the area of the former vehicle maintenance ramp. Benzene was also detected at concentrations of 0.002 ppm and 0.0011 ppm in soil samples collected from sampling boring SB-5 from depths of 10 feet BLS and 20 feet BLS, respectively. Sampling boring SB-5 is located approximately 15 feet north of the former vehicle maintenance ramp. The highest concentrations of toluene and m,p-xylenes were detected in soil sampled from sampling boring SB-8, located to the south of the site, approximately 30 feet east of Building 6. M,p-xylenes were detected at a concentration of 0.0268 ppm in the soil sample collected from a depth of 5 feet BLS. Toluene, m,p-xylenes, and total BTX were detected at concentrations of 0.103 ppm, 0.0107 ppm, and 0.1137 ppm, respectively, in the soil sampled from a depth of 10 feet BLS.

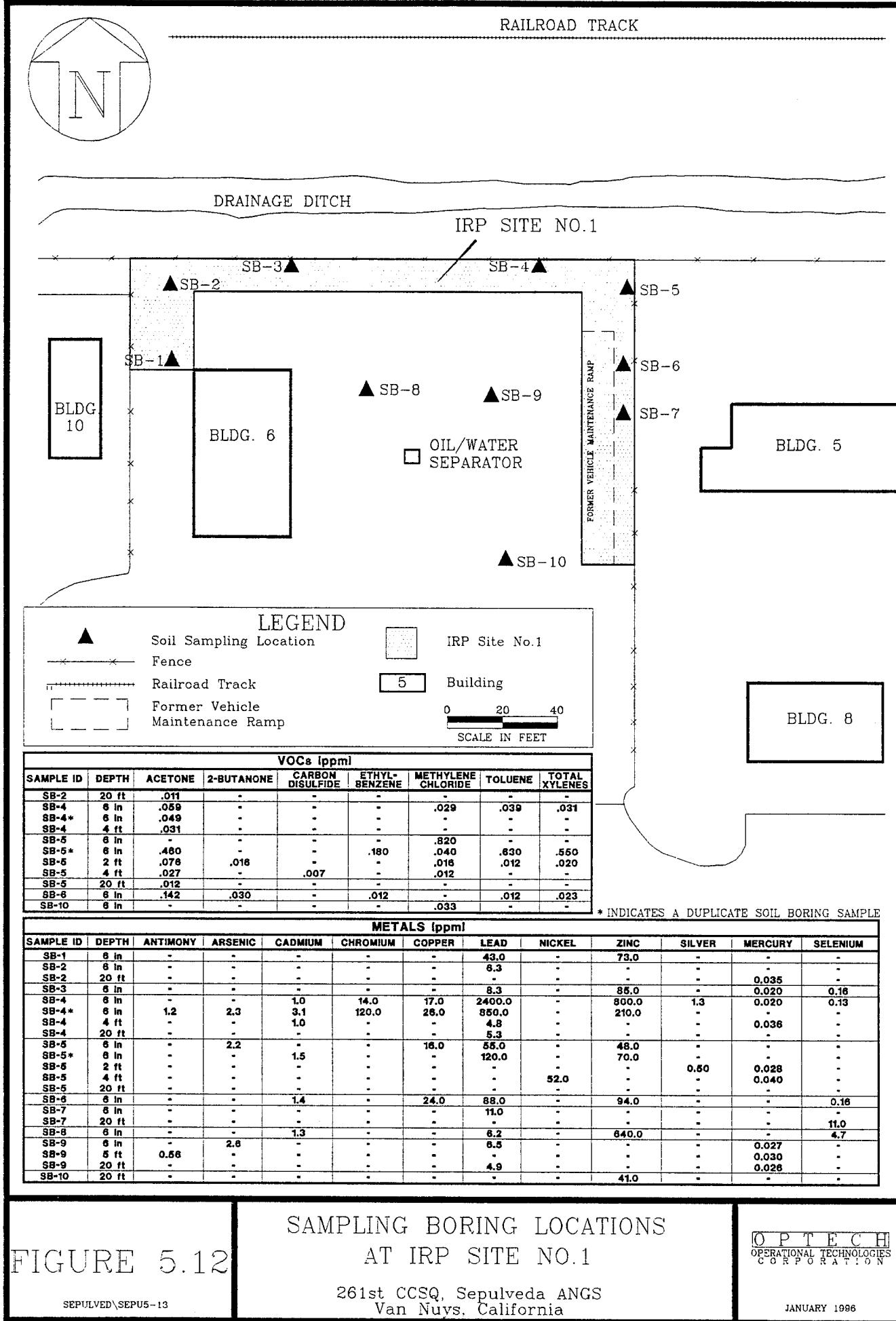
GC field screening of soil samples is intended to provide preliminary information only, and such results are not used in making recommendations for future remedial actions.

5.3.3 Soil Investigation Findings

Soil samples collected from ten soil sampling borings were used to provide geologic information for describing the subsurface geology at IRP Site No. 1. Twenty-four investigative soil samples were submitted for laboratory analysis to provide an assessment of the presence and type of soil contamination present.

5.3.3.1 Soil Sampling Boring Locations

Ten soil sampling borings were installed at the site to obtain soil samples for laboratory analysis for defining any existing soil contamination, and to aid in defining the vertical and horizontal extent of contamination. Soil samples were also used for characterizing site geology and subsurface soil conditions. Sampling boring locations were selected after a review of soil vapor survey results. Soil sampling borings SB-3, SB-4, SB-6, SB-8, and SB-9 were located to confirm contamination detected during the soil vapor survey. Soil sampling borings SB-3 and SB-4 were located along the fence line within the area formerly used for waste disposal, SB-6 was located in the area of the former vehicle maintenance ramp, and SB-8 and SB-9 were located in the area south and west of the site. Soil sampling borings SB-1, SB-2, SB-5, SB-7, and SB-10 were located to confirm the areal extent of contamination delineated by the soil vapor survey. Soil sampling boring locations are indicated on Figure 5.12.



5.3.3.2 Nature and Extent of Soil Contamination

Ten soil sampling borings were installed at IRP Site No. 1 from which 24 investigative and two duplicate soil samples were collected for laboratory analysis. The sampling borings were installed to a depth of 20 feet BLS and soil samples collected on 8 and 9 June 1994. Sampling intervals submitted for laboratory analysis and the analytical program are presented in Table 5.4. VOC surrogate recoveries ranged from 79 to 120 percent which are within acceptable limits, except for samples SB-2-0.5', SB-2-20', SB-3-0.5', SB-5-0.5'-dup and SB-6-0.5' which are outside of quality control limits. SVOC surrogate recoveries ranged from 20 to 133 percent which are within acceptable limits, except for sample SB-5-0.5'-dup which is outside of quality control limits. VOC and SVOC matrix spike recoveries ranged from 84 to 94 percent and 30 to 124 percent, respectively, which are within acceptable ranges. Quality assurance/quality control sample analytical results are reported in Appendix D. A complete listing of the results for all analytical parameters for each sample is given in Appendix E.

5.3.3.2.1 VOC Contamination

VOCs detected in soil samples collected from IRP Site No. 1 are shown in Table 5.5. Benzene, ethylbenzene, toluene, and/or total xylenes were detected in soil samples collected from four sampling borings: SB-3 and SB-4, located along the north fence line within the area formerly used for waste disposal; SB-5, located north of the former vehicle maintenance ramp; and SB-6, located in the area of the former vehicle maintenance ramp. The highest concentrations were detected in the soil samples collected from a depth of 6 inches BLS, and were not detected below a depth of 2 feet BLS.

The highest concentrations of BTEX were detected in the duplicate soil sample collected from boring SB-5 from a depth of 6 inches BLS. Benzene, ethylbenzene, toluene, and total xylenes were detected at concentrations of 0.38 ppm, 0.18 ppm, 0.63 ppm, and 0.55 ppm, respectively. Toluene and total xylenes were also detected at concentrations of 0.012 ppm and 0.02 ppm, respectively, in the soil sample collected from a depth of 2 feet BLS. Benzene, ethylbenzene, toluene, and total xylenes were detected at concentrations of 0.032 ppm, 0.012 ppm, 0.012 ppm, and 0.023 ppm, respectively, in the soil sample collected from sampling boring SB-6 from a depth of 6 inches BLS. Benzene was detected at a concentration of 0.006 ppm in the soil sampled from boring SB-3 from a depth of 6 inches BLS. Toluene and total xylenes were collected from sampling boring SB-4 from a depth of 6 inches BLS. The areal extent of BTEX concentrations detected in soil sampled from a depth of 6 inches BLS is illustrated in Figure 5.13.

Table 5.4
IRP Site No. 1 Soil Sampling and Analytical Program
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Sampling Number | Sample Depth (Ft BLS) | Additional Samples | Soil Analyses and Methods | | | | Oil & Grease (Mod. SM 5520 C) |
|-----------------|-----------------------|--------------------------------|---------------------------|----------------|-------------------------------|---------------------|-------------------------------|
| | | | VOCs (SW8240) | SVOCs (SW8270) | Metals (SW6020 ^a) | TPH (Cal Mod. 8015) | |
| SB-1 | 0.5 | | X | X | X | X | X |
| SB-1 | 20.0 | 0.5 | X | X | X | X | X |
| SB-2 | 20.0 | 0.5 | X | X | X | X | X |
| SB-3 | 0.5 | 20.0 | X | X | X | X | X |
| SB-3 | 0.5 | 20.0 | X | X | X | X | X |
| SB-4 | 0.5 | 0.5 | X | X | X | X | X |
| SB-4 | 0.5 | 4.0 | X | X | X | X | X |
| SB-4 | 4.0 | 20.0 | X | X | X | X | X |
| SB-5 | 0.5 | 0.5 | X | X | X | X | X |
| SB-5 | 0.5 | 2.0 | X | X | X | X | X |
| SB-5 | 2.0 | 4.0 | X | X | X | X | X |
| SB-5 | 4.0 | 20.0 | X | X | X | X | X |
| SB-5 | 20.0 | 0.5 | X | X | X | X | X |
| SB-6 | 0.5 | 20.0 | X | X | X | X | X |
| SB-6 | 20.0 | 0.5 | X | X | X | X | X |
| SB-7 | 0.5 | 0.5 | X | X | X | X | X |
| SB-7 | 0.5 | 20.0 | X | X | X | X | X |
| SB-7 | 20.0 | 0.5 | X | X | X | X | X |
| SB-8 | 0.5 | 20.0 | X | X | X | X | X |
| SB-8 | 20.0 | 0.5 | X | X | X | X | X |
| SB-9 | 0.5 | 5.0 | X | X | X | X | X |
| SB-9 | 5.0 | 20.0 | X | X | X | X | X |
| SB-9 | 20.0 | 0.5 | X | X | X | X | X |
| SB-10 | 0.5 | 20.0 | X | X | X | X | X |
| SB-10 | 20.0 | MS Equip. Blank Trip Blank (3) | X | X | X | X | N |

SB - Sampling Boring.

VOCs - Volatile Organic Compounds.

TPH - Total Petroleum Hydrocarbons.

MSD - Matrix spike duplicate.

^aLead and zinc were analyzed by Methods SW7420 and SW7950, respectively.

^bZinc was analyzed by Method SW7950.

X - Indicates parameter was analyzed.

N - Indicates analysis was not run.

Ft BLS - Feet below land surface.

SVOCs - Semivolatile Organic Compounds.

MS - Matrix spike.

^cWith the exception of mercury (SW7471) and selenium (SW7742).

^dSelenium was analyzed by Method SW7741A.

^eMercury and selenium were analyzed by Methods SW7470 and USEPA270.2, respectively.

Table 5.4
IRP Site No. 1 Soil Sampling and Analytical Program
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Sampling Boring Number | Sample Depth (ft BLS) | Additional Samples | Soil Analyses and Methods | | | | Oil & Grease (Mod. SM 5520 C) |
|------------------------|-----------------------|--------------------|---------------------------|----------------|-------------------------------|---------------------|-------------------------------|
| | | | VOCs (SW8240) | SVOCs (SW8270) | Metals (SW6020 ^a) | TPH (Cal Mod. 8015) | |
| SB-1 | 0.5 | | X | X | X | X | X |
| SB-1 | 20.0 | | X | X | X | X | X |
| SB-2 | 0.5 | | X | X | X | X | X |
| SB-2 | 20.0 | | X | X | X | X | X |
| SB-3 | 0.5 | | X | X | X | X | X |
| SB-3 | 20.0 | | X | X | X | X | X |
| SB-4 | 0.5 | Duplicate | X | X | X | X | X |
| SB-4 | 0.5 | Duplicate | X | X | X | X | X |
| SB-4 | 4.0 | | X | X | X | X | X |
| SB-4 | 20.0 | | X | X | X | X | X |
| SB-5 | 0.5 | | X | X | X | X | X |
| SB-5 | 0.5 | Duplicate | X | X | X | X | X |
| SB-5 | 2.0 | | X | X | X | X | X |
| SB-5 | 4.0 | | X | X | X | X | X |
| SB-5 | 20.0 | | X | X | X | X | X |
| SB-6 | 0.5 | | X | X | X | X | X |
| SB-6 | 0.5 | Duplicate | X | X | X | X | X |
| SB-6 | 20.0 | | X | X | X | X | X |
| SB-7 | 0.5 | | X | X | X | X | X |
| SB-7 | 20.0 | | X | X | X | X | X |
| SB-8 | 0.5 | | X | X | X | X | X |
| SB-8 | 20.0 | | X | X | X | X | X |
| SB-9 | 0.5 | | X | X | X | X | X |
| SB-9 | 5.0 | | X | X | X | X | X |
| SB-9 | 20.0 | | X | X | X | X | X |
| SB-10 | 0.5 | | X | X | X | X | X |
| SB-10 | 20.0 | | X | X | X | X | X |
| | | MSD Equip. Blank | X | X | X | X | N |
| | | Blank Trip (3) | X | X | X | X | N |

SB - Sampling Boring.

VOCs - Volatile Organic Compounds.

TPH - Total Petroleum Hydrocarbons.

MSD - Matrix spike duplicate.

^aLead and zinc were analyzed by Methods SW7420 and SW7950, respectively.

Zinc was analyzed by Method SW7950.

X - Indicates parameter was analyzed.

N - Indicates analysis was not run.

Ft BLS - Feet below land surface.

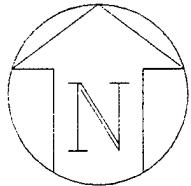
SVOCs - Semivolatile Organic Compounds.

MS - Matrix spike.

^aWith the exception of mercury (SW7471) and selenium (SW7742).

^bSelenium was analyzed by Method SW7741A.

^cMercury and selenium were analyzed by Methods SW7470 and USEPA 270.2, respectively.



RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO.1

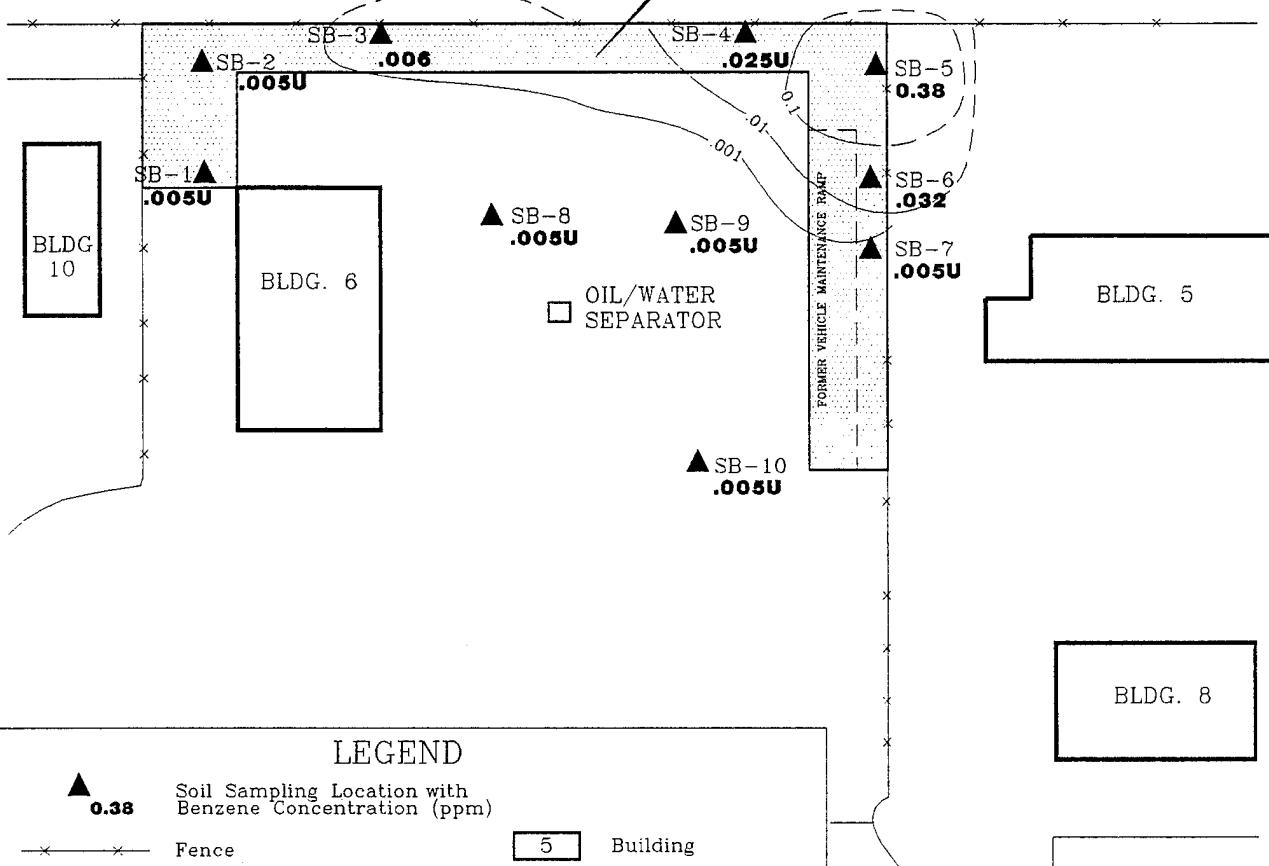


FIGURE 5.13

SEPULVEDA\SEPUS-12

AREAL EXTENT OF BENZENE
DETECTED AT A
DEPTH OF 6 INCHES BLS
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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Acetone was detected at concentrations ranging from 0.011 to 0.46 ppm in soil samples collected from sampling borings SB-2, SB-4, SB-5, and SB-6 with the highest concentration detected in the duplicate soil sample collected from boring SB-5 from a depth of 6 inches BLS. Concentrations were generally found to decrease with depth. Methylene chloride was detected in soil samples collected from all sampling borings, with the exception of borings SB-1, SB-2, and SB-3 (see Table 5.5). Methylene chloride was detected at concentrations ranging from 0.005 to 0.82 ppm, with the highest concentration detected in the soil sampled from boring SB-5 from a depth of 6 inches BLS. Concentrations were generally found to decrease with depth. The VOC 2-butanone was detected at concentrations of 0.016 ppm and 0.03 ppm in soil sampled from borings SB-5 from a depth of 2 feet BLS and SB-6 from a depth of 6 inches BLS, respectively. Carbon disulfide was detected at a concentration of 0.007 ppm in the soil sample collected from sampling boring SB-5 from a depth of 4 feet BLS. Acetone, methylene chloride, and 2-butanone are suspected laboratory contaminants.

5.3.3.2.2 SVOC Contamination

The SVOC 4-methylphenol was detected at a concentration of 2.4 ppm in the soil sample collected from sampling boring SB-5 from a depth of 6 inches BLS, but was not detected in the duplicate sample collected from the same depth. The SVOC 4-methylphenol was not detected in the background soil samples.

5.3.3.2.3 TPH, and Oil and Grease Contamination

TPH and oil and grease concentrations detected in soil samples collected from IRP Site No. 1 are shown in Table 5.6. The TPH (diesel and gasoline) values for background soil boring SB-8 were non-detect, indicating that the background values for the site are non-detect. TPH (diesel) was detected at a concentration of 1,400 ppm, which exceeds this background value, in the soil sample collected from sampling boring SB-4 from a depth of 6 inches BLS. Sampling boring SB-4 is located along the north fence line within the area formerly used for waste disposal. TPH (gasoline) was detected at concentrations of 0.53 ppm and 0.72 ppm in the soil samples collected from a depth of 6 inches BLS from borings SB-5 and SB-6, respectively. Sampling boring SB-5 is located approximately 15 feet north of the former vehicle maintenance ramp, and SB-6 is located in the area of the former vehicle maintenance ramp.

Hydrocarbons were detected in the soil samples collected from a depth of 6 inches BLS from sampling borings SB-5 and SB-6. Hydrocarbon range C6 -C40+ was detected at a concentration of 1,300 ppm in the soil sample collected from boring SB-5, and hydrocarbon range C22 -

Table 5.6
TPH and Oil and Grease Detected in
Soil Samples Collected from IRP Site No. 1
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Sample ID Number | TPH (Diesel) (ppm) | TPH (Gasoline) (ppm) | Hydrocarbon Range (ppm) | Oil and Grease (ppm) |
|------------------|--------------------------|----------------------------|---|----------------------------|
| SB-1-6" | 10U | .500U | NR | 34 |
| SB-1-20' | 10U | .500U | NR | 5U |
| SB-2-6" | 10U | .500U | NR | 380 |
| SB-2-20' | 10U | .500U | NR | 5U |
| SB-3-6" | 10U | .500U | NR | 8,500 |
| SB-3-20' | 10U | .500U | NR | 5U |
| SB-4-6" | 1,400 | .500U | NR | 5,700 |
| SB-4-6"-dup | 10U | .500U | NR | 28 |
| SB-4-4' | 10U | .500U | NR | 28 |
| SB-4-20' | 10U | .500U | NR | 5U |
| SB-5-6" | 50U ^a | .530 | (C6-C40+) 1,300 ^c | 20,000 |
| SB-5-6"-dup | 100U ^b | .500U | (C22-C40+) 3,600 ^c (C9-C19) 1,700 | 51,000 |
| SB-5-2' | 10U | .500U | NR | 1,000 |
| SB-5-4' | 10U | .500U | NR | 170 |
| SB-5-20' | 10U | .500U | NR | 5U |
| SB-6-6" | 10U | .720 | (C7-C10) 310 (C22-C40+) 490 ^c | 2,800 |
| SB-6-20' | 10U | .500U | NR | 5U |
| SB-7-6" | 10U | .500U | NR | 1,600 |
| SB-7-20' | 10U | .500U | NR | 5U |
| SB-8-6" | 10U | .500U | NR | 5U |
| SB-8-20' | 10U | .500U | NR | 5U |
| SB-9-6" | 10U | .500U | NR | 250 |
| SB-9-5' | 10U | .500U | NR | 5U |
| SB-9-20' | 10U | .500U | NR | 5U |
| SB-10-6" | 10U | .500U | NR | 310 |
| SB-10-20' | 10U | .500U | NR | 5U |

ppm - Parts per million.

SB - Sampling Boring.

U - Compound was analyzed for but not detected. Number preceding "U" indicates the detection limit.

NR - None reported.

^aDetection limit reported at 5x dilution factor.

^bDetection limit reported at 10x dilution factor.

^cResults for the hydrocarbon range did not match a typical hydrocarbon pattern. Results were quantified using a diesel standard; however, the hydrocarbon pattern did not match a diesel pattern.

C40+ and C9 - C19 hydrocarbons were detected at concentrations of 3,600 ppm and 1,700 ppm, respectively, in the duplicate soil sample. Hydrocarbon range C22 - C40+ and C7 - C10 hydrocarbons were detected at concentrations of 490 ppm and 310 pm, respectively, in the soil sample collected from boring SB-6.

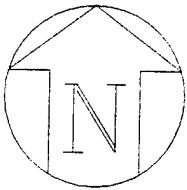
Oil and grease was detected in soil samples collected from all sampling borings, with the exception of boring SB-8 (see Table 5.6). The highest concentrations were detected in the soil samples collected from a depth of 6 inches BLS and were not detected below a depth of 4 feet BLS. Oil and grease was detected at concentrations ranging from 28 to 51,000 ppm. The highest concentrations were detected in the soil sample and duplicate soil sample collected from boring SB-5 from a depth of 6 inches BLS; oil and grease was detected at a concentration of 20,000 ppm in the soil sample and at 51,000 ppm in the duplicate sample. Oil and grease was detected at concentrations of 8,500 ppm, 5,700 ppm, 2,800 ppm, and 1,600 ppm in soil samples collected from borings SB-3, SB-4, SB-6, and SB-7, respectively, from a depth of 6 inches BLS. The areal extent of oil and grease contamination detected at a depth of 6 inches BLS is illustrated in Figure 5.14.

5.3.3.2.4 Metals Contamination

Metals detected in soil samples collected from IRP Site No. 1 are shown in Table 5.7. Metals were detected at concentrations exceeding background levels primarily in the soil samples collected from a depth of 6 inches BLS. The greatest quantity and highest concentrations of metals were detected in soil samples collected from sampling borings SB-4, located along the north fence line within the area formerly used for waste disposal, and SB-5, located approximately 15 feet north of the former vehicle maintenance ramp.

Lead was detected in all soil samples collected from IRP Site No. 1 at concentrations ranging from 2.0 to 2,400.0 ppm (see Table 5.7). Lead was detected at concentrations exceeding background levels in all soil samples collected from a depth of 6 inches BLS, with the exception of the sample collected from boring SB-10. The highest concentrations of lead were detected in the soil samples collected from a depth of 6 inches BLS from sampling borings SB-4, SB-5, and SB-6. Lead was detected at concentrations of 2,400.0 ppm and 850.0 ppm in the soil sample and duplicate soil sample collected from boring SB-4, respectively; 55.0 ppm and 120.0 ppm in the soil sample and duplicate soil sample collected from boring SB-5, respectively; and at 88.0 ppm in the soil sample collected from boring SB-6. The only soil boring where lead concentrations did not exceed background values was SB-10.

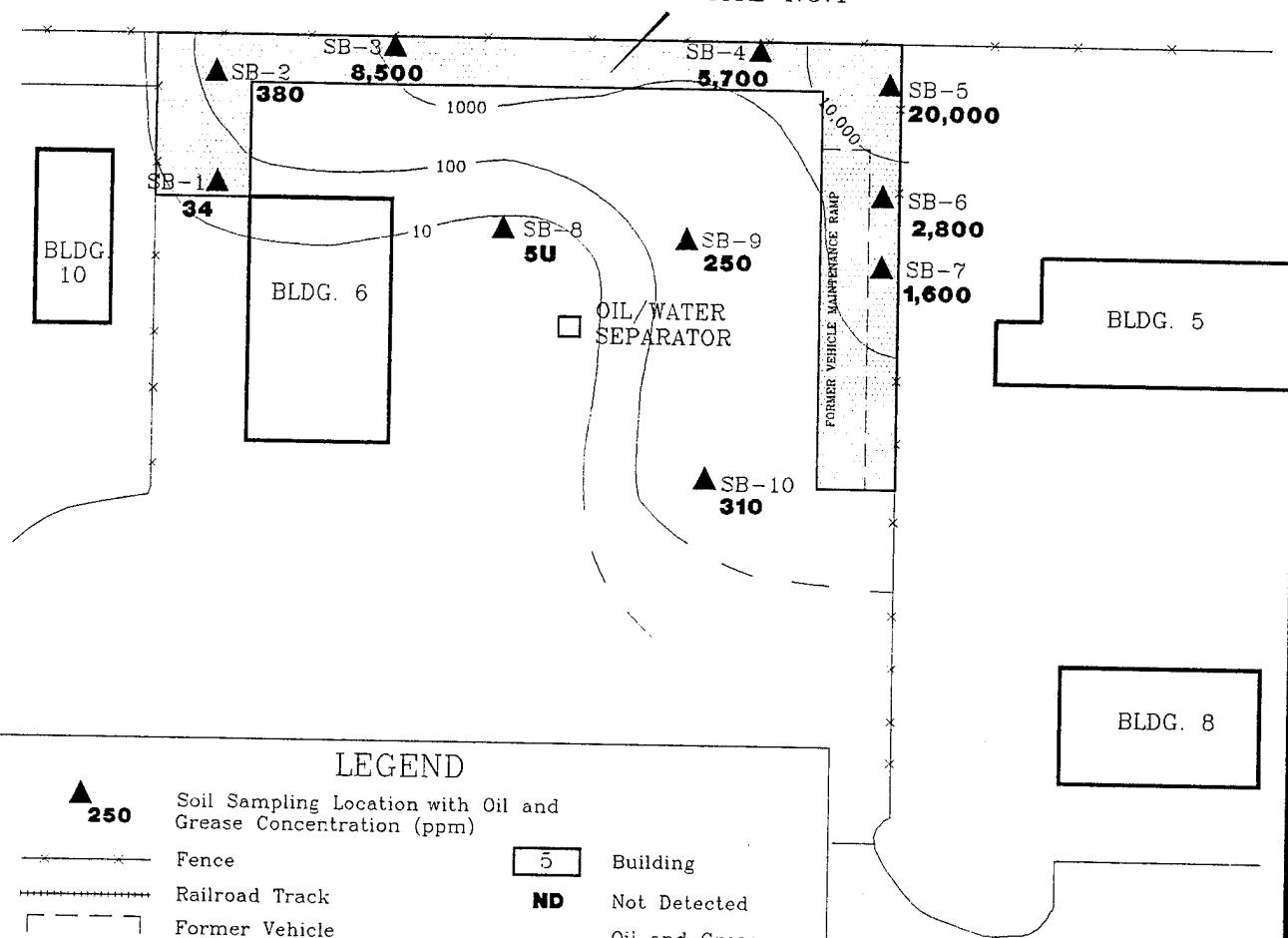
Arsenic was detected at concentrations ranging from 0.62 to 2.6 ppm, with concentrations exceeding background levels in soil sampled from a depth of 6 inches BLS from borings SB-4, SB-5, and SB-9. Cadmium was detected at concentrations ranging from 0.53 to 3.1 ppm, with concentrations exceeding background levels in soil samples collected from sampling borings SB-4, SB-5, SB-6, and SB-8. Chromium was detected at concentrations ranging from 5.9 to 120.0 ppm, with concentrations exceeding background levels in the soil sample and duplicate soil



RAILROAD TRACK

DRAINAGE DITCH

IRP SITE NO.1



LEGEND



Soil Sampling Location with Oil and Grease Concentration (ppm)



Fence



Railroad Track



Former Vehicle Maintenance Ramp



Building



Not Detected



Oil and Grease Isoconcentration Contour



10

0 20 40
SCALE IN FEET

AREAL EXTENT OF OIL AND GREASE DETECTED AT DEPTH OF 6 INCHES BLS

261st CCSQ, Sepulveda ANGS
Van Nuys, California

FIGURE 5.14

SEPULVEDA\SEPUS-12

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Table 5.7
Metals Detected in Soil Samples
Collected from IRP Site No. 1
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Sample ID Number | Antimony (ppm) | Arsenic (ppm) | Cadmium (ppm) | Chromium (ppm) | Copper (ppm) | Lead (ppm) | Nickel (ppm) | Zinc (ppm) | Silver (ppm) | Mercury (ppm) | Selenium (ppm) |
|-----------------------------------|----------------|---------------|---------------|----------------|--------------|------------|--------------|------------|--------------|---------------|----------------|
| SB-1-6" | 0.500U | 0.80 | 0.70 | 5.9 | 6.7 | 43.0 | 7.7 | 73.0 | 0.500U | 0.018 | 0.10U |
| SB-1-20" | 0.500U | 0.69 | 0.500U | 6.7 | 8.1 | 2.0 | 8.8 | 25.0 | 0.500U | 0.018 | 0.10U |
| SB-2-6" | 0.500U | 1.4 | 0.53 | 6.7 | 10.0 | 6.3 | 10.0 | 30.0 | 0.500U | 0.016 | 0.20 |
| SB-2-20" | 0.500U | 0.62 | 0.500U | 7.2 | 8.5 | 2.1 | 9.6 | 28.0 | 0.500U | 0.035 | 0.10U |
| SB-3-6" | 0.500U | 1.5 | 0.500U | 7.0 | 12.0 | 8.3 | 14.0 | 85.0 | 0.500U | 0.020 | 0.16 |
| SB-3-20" | 0.500U | 1.3 | 0.500U | 7.5 | 9.4 | 2.8 | 11.0 | 28.0 | 0.500U | 0.017 | 0.10U |
| SB-4-6" | 0.500U | 2.0 | 1.0 | 14.0 | 17.0 | 2,400.0 | 8.5 | 800.0 | 1.3 | 0.020 | 0.13 |
| SB-4-6"-dup | 1.2 | 2.3 | 3.1 | 120.0 | 26.0 | 850.0 | 9.6 | 210.0 | 0.500U | 0.010U | 3.0U |
| SB-4-4" | 0.500U | 1.5 | 1.0 | 10.0 | 14.0 | 4.8 | 18.0 | 36.0 | 0.500U | 0.036 | 3.0U |
| SB-4-20" | 0.500U | 1.5 | 0.500U | 7.5 | 8.6 | 5.3 | 9.5 | 32.0 | 0.500U | 0.018 | 0.10U |
| SB-5-6" | 0.500U | 2.2 | 0.66 | 8.8 | 16.0 | 55.0 | 11.0 | 48.0 | 0.500U | 0.017 | 0.10U |
| SB-5-6"-dup | 0.500U | 1.7 | 1.5 | 8.6 | 9.9 | 120.0 | 7.9 | 70.0 | 0.500U | 0.010 | 3.0U |
| SB-5-2" | 0.500U | 1.2 | 0.57 | 7.4 | 9.1 | 3.4 | 12.0 | 26.0 | 0.50 | 0.028 | 3.0U |
| SB-5-4" | 0.500U | 1.0 | 0.500U | 7.0 | 8.8 | 3.0 | 52.0 | 28.0 | 0.500U | 0.040 | 3.0U |
| SB-5-20" | 0.500U | 1.5 | 0.500U | 9.3 | 12.0 | 3.0 | 15.0 | 34.0 | 0.500U | 0.014 | 0.15 |
| SB-6-6" | 0.500U | 1.8 | 1.4 | 12.0 | 24.0 | 88.0 | 12.0 | 94.0 | 0.500U | 0.014 | 0.16 |
| SB-6-20" | 0.500U | 1.2 | 0.500U | 9.2 | 12.0 | 2.8 | 9.7 | 36.0 | 0.500U | 0.019 | 0.10U |
| SB-7-6" | 0.500U | 1.4 | 0.54 | 7.6 | 9.7 | 11.0 | 8.2 | 26.0 | 0.500U | 0.019 | 3.0U |
| SB-7-20" | 0.500U | 0.93 | 0.500U | 7.9 | 8.2 | 3.3 | 7.2 | 30.0 | 0.500U | 0.010U | 11.0 |
| SB-8-6" | 0.500U | 1.4 | 1.3 | 11.0 | 11.0 | 6.2 | 13.0 | 640.0 | 0.500U | 0.013 | 4.7 |
| SB-8-20" | 0.500U | 0.82 | 0.500U | 9.1 | 8.7 | 3.8 | 7.8 | 38.0 | 0.500U | 0.012 | 3.0U |
| SB-9-6" | 0.500U | 2.6 | 0.500U | 7.3 | 9.7 | 6.5 | 10.0 | 32.0 | 0.500U | 0.027 | 3.0U |
| SB-9-5" | 0.56 | 1.4 | 0.500U | 8.4 | 9.2 | 3.3 | 13.0 | 33.0 | 0.500U | 0.030 | 3.0U |
| SB-9-20" | 0.500U | 0.87 | 0.500U | 11.0 | 8.5 | 4.9 | 9.4 | 39.0 | 0.500U | 0.026 | 3.0U |
| SB-10-6" | 0.500U | 1.0 | 0.53 | 6.5 | 7.1 | 3.0 | 10.0 | 22.0 | 0.500U | 0.010U | 3.0U |
| SB-10-20" | 0.500U | 1.2 | 0.500U | 10.0 | 9.7 | 4.1 | 8.2 | 41.0 | 0.500U | 0.017 | 3.0U |
| Maximum Background Concentrations | 0.500U | 2.0 | 0.89 | 13.0 | 14.0 | 4.6 | 18.0 | 39.0 | 0.500U | 0.019 | 3.0U |

SB — Sampling Boring,
U — Compound was analyzed for but not detected. Number preceding "U" indicates the detection limit.
ppm — Parts per million.

sample collected from boring SB-4 from a depth of 6 inches BLS. Mercury was detected at concentrations ranging from 0.01 to 0.04 ppm, with concentrations exceeding background levels in soil sampled from sampling borings SB-2, SB-3, SB-4, SB-5, and SB-9. Selenium was detected at concentrations of 11.0 ppm and 4.7 ppm in soil samples collected from sampling borings SB-7, from a depth of 20 feet BLS, and SB-8, from a depth of 6 inches BLS, respectively. Copper was detected at concentrations ranging from 6.7 to 26.0 ppm, with concentrations exceeding background levels in soil sampled from a depth of 6 inches BLS from borings SB-4, SB-5, and SB-6. Nickel was detected at concentrations ranging from 7.2 to 52.0 ppm, with concentrations exceeding background levels in the soil sample collected from boring SB-5 from a depth of 4 feet BLS. Zinc was detected at concentrations ranging from 22.0 to 800.0 ppm, with concentrations exceeding background levels in all soil samples collected from a depth of 6 inches BLS, with the exception of samples collected from borings SB-2, SB-7, SB-9, and SB-10. The highest concentrations of zinc were detected in the soil samples collected from sampling borings SB-4 and SB-8 from a depth of 6 inches BLS. Zinc was detected at concentrations of 800.0 ppm and 210.0 ppm in the soil sample and duplicate soil sample collected from boring SB-4, respectively, and at 640.0 ppm in the soil sample collected from boring SB-8.

5.3.4 Conclusions

Soil samples were collected from IRP Site No. 1 and submitted for laboratory analysis to confirm the presence or absence of contamination and to provide data needed to reach a decision point for the site. Past activities at the site indicated that suspected contamination consists primarily of waste oils, hydraulic fluid, paints, and solvents. Therefore, samples were submitted for analysis of VOCs, SVOCs, priority pollutant metals, TPH, and oil and grease. Only those parameters, exceeding background values are addressed in this section.

TPH (diesel) and hydrocarbons were detected at concentrations greater than background levels in soil samples collected from a depth of 6 inches BLS from sampling borings SB-4, SB-5 and SB-6. Soil sampling boring SB-4 is located along the fence line within the area formerly used for waste disposal. Sampling boring SB-5 is located approximately 15 feet north of the former vehicle maintenance ramp, and SB-6 is located in the area of the former vehicle maintenance ramp. TPH (diesel) was detected at a concentration of 1,400 ppm in the soil sample collected from sampling boring SB-4. Hydrocarbon range C6 - C40+ was detected at a concentration of 1,300 ppm in the soil sample collected from boring SB-5, and hydrocarbon range C22 - C40+ and C9 - C19 hydrocarbons were detected at concentrations of 3,600 ppm and 1,700 ppm, respectively, in the duplicate soil sample. Hydrocarbon range C22 - C40+ and C7 - C10

hydrocarbons were detected at concentrations of 490 ppm and 310 ppm, respectively, in the soil sample collected from boring SB-6 from a depth of 6 inches BLS.

Lead was detected at concentrations exceeding the background value in soil samples collected from all soil borings, with the exception of SB-10.

5.4 AOC NO. 1 (LIME PIT) FINDINGS

AOC No. 1 is located on the west side of Sepulveda ANGS, approximately 55 feet west of the recently built Vehicle Maintenance/AGE Facility and 150 feet north of the underground missile storage structures (see Figure 5.15). The lime pit, as identified on the construction drawings, was 4 feet deep, 5 feet wide, and 40 feet in length. The pit was filled to surface grade with 2 inches of crushed limestone. The acid pit is located under a 2.5-inch-thick asphalt parking lot. No underground utilities are located in the vicinity of the site.

5.4.1 Geologic and Hydrologic Investigation Results

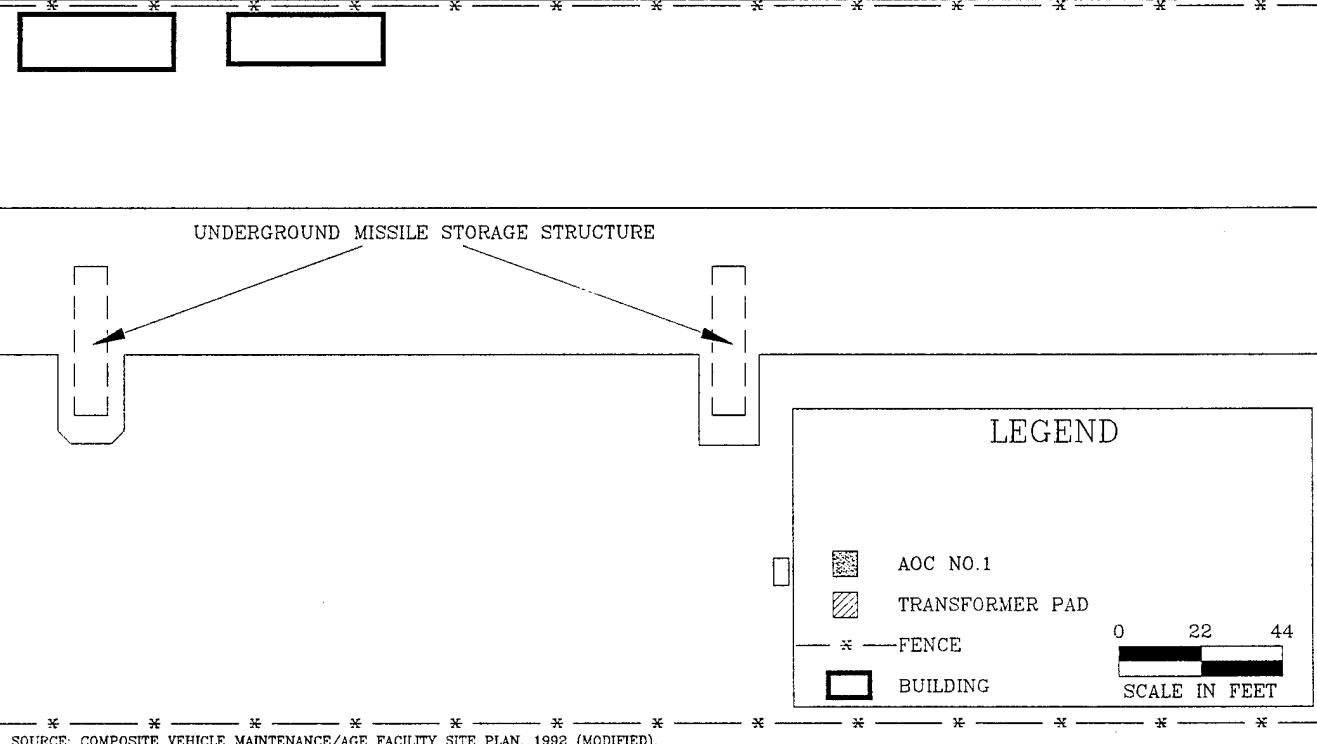
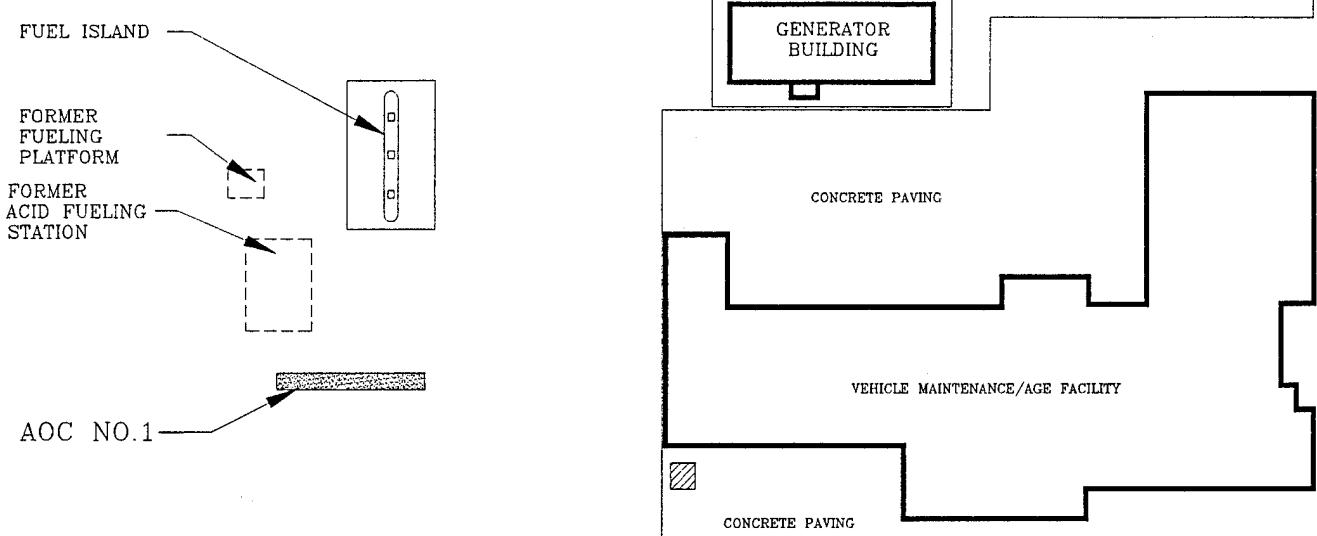
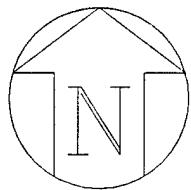
Soil samples collected from five soil sampling locations were used to provide geologic information for describing the subsurface geology at AOC No. 1. Complete lithologic logs for the holes installed during this investigation are presented in Appendix B.

A brown silty clay was the predominant lithology encountered in soil borings from surface to total depth. A crushed limestone fill was encountered from 1.5 to 7.5 feet BLS in AOCSL-03 and AOCSL-04, which were installed in the former lime pit. Some sand was encountered in boring AOCSL-01 from between 17.5 feet BLS to the total depth. No saturated conditions were encountered. Geologic cross-section A-A', depicting the subsurface geology, is indexed in Figure 5.16 and shown in Figure 5.17.

5.4.2 Screening Activities Results

5.4.2.1 Field GC Screening Results of Soil Samples

Selective soil samples were field screened with a Photovac 10S55 Portable GC, calibrated to screen for BTEX. The GC could not be calibrated to screen for ethylbenzene, as previously discussed in Section 4.3.2. Toluene was detected at concentrations of 0.0012 ppm and 0.0013 ppm in soil sampled from a depth of 10 feet BLS from AOCSL-02 and AOCSL-03, respectively.



SOURCE: COMPOSITE VEHICLE MAINTENANCE/AGE FACILITY SITE PLAN, 1992 (MODIFIED).

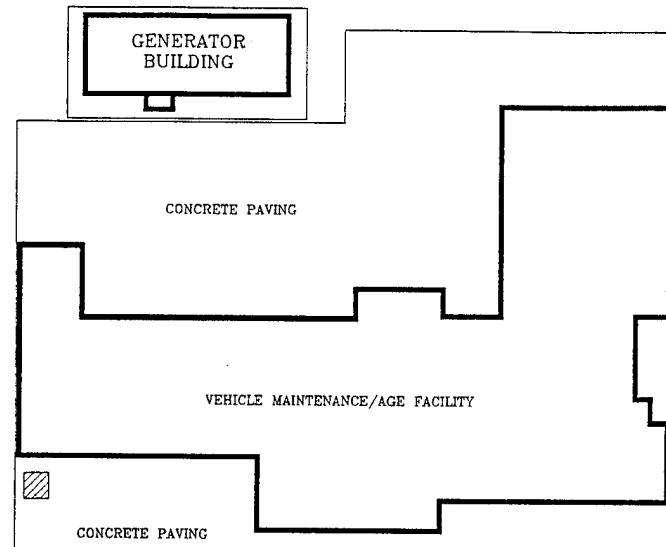
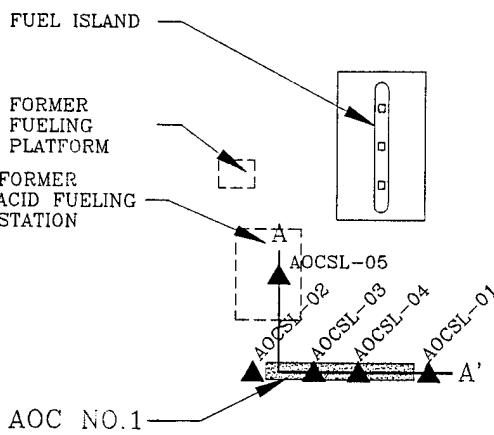
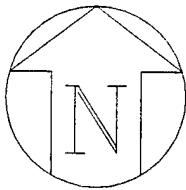
FIGURE 5.15

SEPULVEDA AOC1

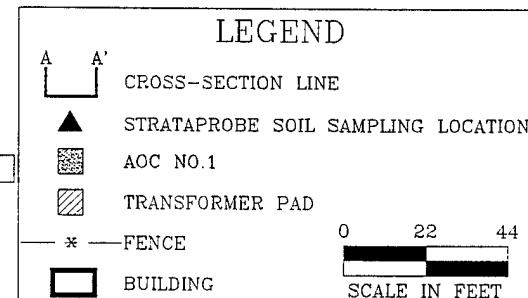
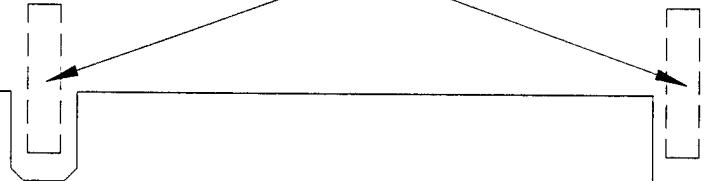
AOC NO.1 SITE MAP
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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UNDERGROUND MISSILE STORAGE STRUCTURE



SOURCE: COMPOSITE VEHICLE MAINTENANCE/AGE FACILITY SITE PLAN, 1992 (MODIFIED).

FIGURE 5.16

SEPULVEDA AOC1

LOCATION OF GEOLOGIC CROSS-
SECTION A-A' AT AOC NO.1
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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WEST

A

A'

EAST

ELEVATION (FEET ABOVE MEAN SEA LEVEL)

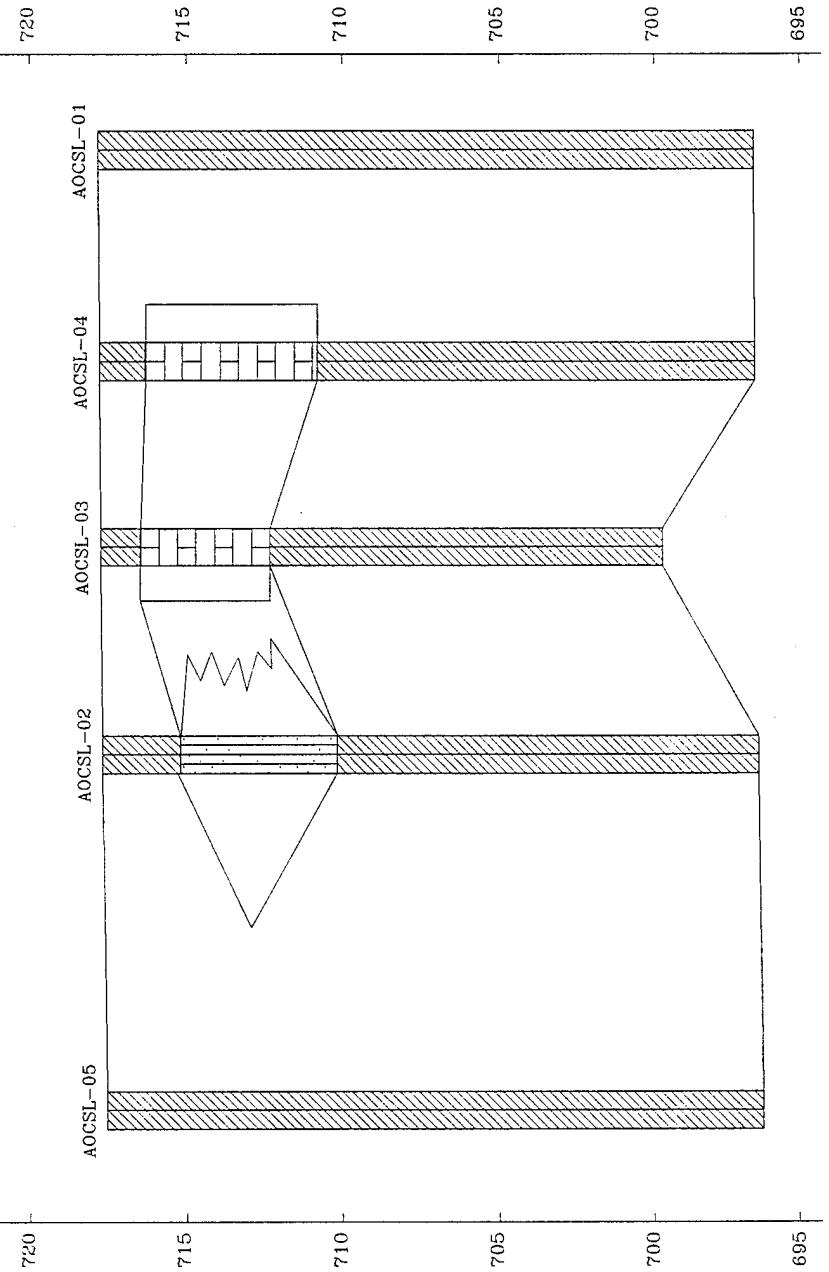


FIGURE 5.17

SEPUN CROSS SECTION

GEOLOGIC CROSS-SECTION A-A'
AT AOC NO. 1
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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Toluene and m,p-xylenes were detected at concentrations of 0.0009 ppm and 0.00004 ppm, respectively, in soil sampled from AOCSL-04 from a depth of 10 feet BLS, and at 0.0019 ppm and 0.0001 ppm, respectively, in soil sampled from a depth of 15 feet BLS. Complete GC data is included in Appendix C.

5.4.3 Soil Investigation Findings

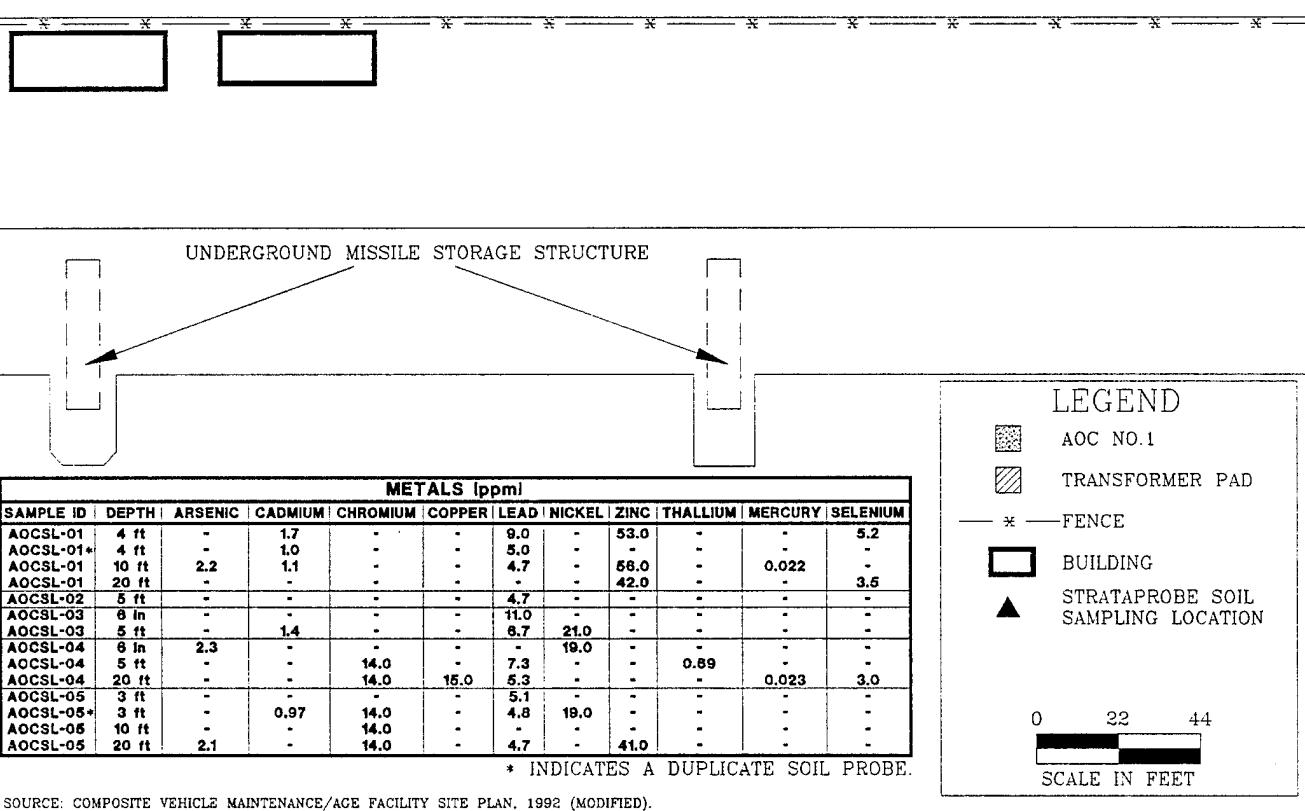
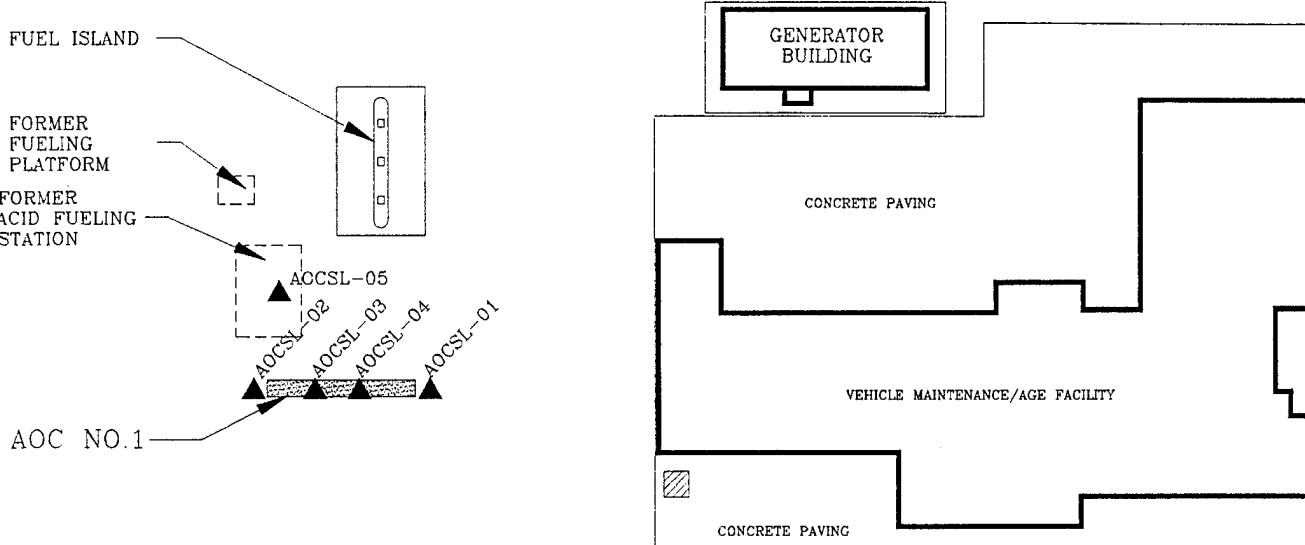
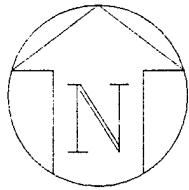
Soil samples collected from five soil sampling locations were used to provide geologic information for describing the subsurface geology at AOC No. 1. Sixteen investigative soil samples were submitted for laboratory analysis to provide an assessment of the presence and type of soil contamination present.

5.4.3.1 Soil Sampling Locations

Five soil sampling locations were installed at AOC No. 1 to obtain soil samples for laboratory analysis for defining any existing soil contamination, and to aid in defining the vertical and horizontal extent of contamination. Soil samples were also used for characterizing site geology and subsurface soil conditions. Two soil sampling locations, AOCSL-03 and AOCSL-04, were installed in the former lime pit. Soil sampling locations AOCSL-01 and AOCSL-02 were installed immediately east and west, respectively, of the lime pit. Soil sampling location AOCSL-05 was installed in the location of the former acid fueling station. Soil sampling locations are indicated on Figure 5.18.

5.4.3.2 Nature and Extent of Soil Contamination

Five soil sampling locations were installed at AOC No. 1, from which 16 investigative and two duplicate soil samples were collected for laboratory analysis. The sampling locations were installed and soil samples collected on 10 June 1994. Sampling intervals submitted for laboratory analysis and the analytical program are presented in Table 5.8. VOC surrogate recoveries ranged from 80 to 110 percent, which are within acceptable limits, except for sample AOCSL-01-4' which is outside of quality control limits. SVOC surrogate recoveries ranged from 60 to 118 percent, which are within acceptable limits, except for samples AOCSL-01-10' and AOCSL-01-20' which are outside of quality control limits. Pesticide surrogate recoveries ranged from 52 to 151 percent, which are within acceptable limits, except for samples AOCSL-03-6' and AOCSL-03-5' which are outside of quality control limits. VOC, SVOC, and pesticide matrix spike recoveries ranged from 80 to 98 percent, 30 to 152 percent, and 76 to 131 percent, respectively, which are within acceptable ranges. Quality assurance/quality control sample



SOURCE: COMPOSITE VEHICLE MAINTENANCE/AGE FACILITY SITE PLAN, 1992 (MODIFIED).

FIGURE 5.18

SEPULVEDA AOC1

SOIL SAMPLING LOCATIONS
AT AOC NO.1
261st CCSQ, Sepulveda ANGS
Van Nuys, California

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Table 5.8
AOC No. 1 Soil Sampling and Analytical Program
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Soil Sampling Location | Sample Depth (Ft BLS) | Additional Samples | Soil Analyses and Methods | | | | | | |
|------------------------|-----------------------|--------------------|---------------------------|----------------|-------------------------------|---------------------|-----------------------|-------------------------|---------------------|
| | | | VOCs (SW8240) | SVOCs (SW8270) | Metals (SW6020 ^a) | Pests/PCBS (SW8080) | Sulfate (USEPA 375.3) | Hydrazine (ASTM D-1385) | TPH (Cal/Mod. 8015) |
| AOCSL-01 | 0.5 | | X | X | X ^b | X | X | X | N |
| AOCSL-01 | 4.0 | Duplicate | X | X | X | X | X | X | N |
| AOCSL-01 | 4.0 | | X | X | X | X | X | X | N |
| AOCSL-01 | 10.0 | | X | X | X | X | X | X | N |
| AOCSL-01 | 20.0 | | X | X | X | X | X | X | N |
| AOCSL-02 | 0.5 | | X | X | X ^b | X | X | X | N |
| AOCSL-02 | 5.0 | | X | X | X | X | X | X | N |
| AOCSL-02 | 15.0 | | X | X | X | X | X | X | N |
| AOCSL-03 | 0.5 | | X | X | X | X | X | X | N |
| AOCSL-03 | 5.0 | | X | X | X | X | X | X | N |
| AOCSL-03 | 15.0 | | X | X | X | X | X | X | N |
| AOCSL-04 | 0.5 | | X | X | X | X | X | X | N |
| AOCSL-04 | 5.0 | | X | X | X | X | X | X | N |
| AOCSL-04 | 20.0 | | X | X | X | X | X | X | N |
| AOCSL-05 | 3.0 | | X | X | X | X | X | X | N |
| AOCSL-05 | 3.0 | Duplicate | X | X | X | X | X | X | N |
| AOCSL-05 | 10.0 | | X | X | X | X | X | X | N |
| AOCSL-05 | 20.0 | | X | X | X | X | X | X | N |
| | | MS | X | X | X | X | X | X | N |
| | | MSD | X | X | X | X | X | X | N |
| | | Equip. Blank | X | X | X | N | N | N | X |
| | | Trip Blank | X | N | N | N | N | N | N |

AOCSL - Area of Concern Sampling Location.
Ft BLS - Feet below land surface.
VOCs - Volatile Organic Compounds.
SVOCs - Semivolatile Organic Compounds.
Pests/PCBS - Pesticides/Polychlorinated biphenyls.
TPH - Total Petroleum Hydrocarbons.

MS - Matrix spike.
MSD - Matrix spike duplicate.

^aWith the exception of mercury (SW7471) and selenium (SW7741A).

^bSelenium was analyzed by Method SW7742.

X - Indicates parameter was analyzed.

N - Indicates analysis was not run.

analytical results are reported in Appendix D. A complete listing of the results for all analytical parameters for each sample is given in Appendix E.

5.4.3.2.1 VOC Contamination

VOCs detected in soil samples collected from AOC No. 1 are shown in Table 5.9.

The VOC methylene chloride was detected in all soil samples collected from AOC No. 1 at concentrations ranging from .025 to .088 ppm. Methylene chloride was also detected in the associated trip blank and equipment blank (designated as rinsate #2); the ASTM Type I reagent water used in the collection of the equipment blank had been obtained from the contract laboratory. Therefore, methylene chloride does not represent a site contaminant, but rather laboratory-induced contamination.

Acetone was detected at concentrations ranging from 0.011 to 0.014 ppm. Acetone was detected at concentrations of 0.011 ppm, 0.014 ppm, and 0.011 ppm in the duplicate soil sample and samples collected from sampling location AOCSL-01 from depths of 10 feet BLS and 20 feet BLS, respectively. Acetone was also detected at a concentration of 0.012 ppm in the soil sampled from sampling location AOCSL-03 from a depth of 15 feet BLS. Acetone was not detected in the background soil samples. Acetone is also suspected to be a laboratory contaminant.

5.4.3.2.2 SVOC Contamination

No SVOCs were detected in soil samples collected from AOC No. 1.

5.4.3.2.3 Pesticides/PCBs Contamination

Pesticides were detected in soil samples collected from only one sampling location, AOCSL-03. Sampling location AOCSL-03 is located in the former lime pit (see Figure 5.18). The pesticides 4,4'-DDE, 4,4'-DDD, and 4,4'-DDT were detected at concentrations of 0.003 ppm, 0.0021 ppm, and 0.012 ppm, respectively, in the soil sample collected from a depth of 6 inches BLS. Dieldrin was detected at a concentration of 0.0022 ppm in the soil sample collected from a depth of 5 feet BLS. Pesticides were not detected in the background soil samples.

No PCBs were detected in soil samples collected from AOC No. 1.

Table 5.9
Volatile Organic Compounds Detected in
Soil Samples Collected from AOC No. 1
261st CCSQ, Supulveda ANGS, Van Nuys, California

| Sample ID Number | Acetone (ppm) | Benzene (ppm) | 2-Butanone (ppm) | Carbon Disulfide (ppm) | Ethylbenzene (ppm) | Methylene Chloride (ppm) | Toluene (ppm) | Total Xylenes (ppm) |
|-----------------------------------|---------------|---------------|------------------|------------------------|--------------------|--------------------------|---------------|---------------------|
| AOCSL-01-6" | .010U | .005U | .010U | .005U | .005U | .048 | .005U | .005U |
| AOCSL-01-4' | .010U | .005U | .010U | .005U | .005U | .088 | .005U | .005U |
| AOCSL-01-4' Dup | .011 | .005U | .010U | .005U | .005U | .075 | .005U | .005U |
| AOCSL-01-10' | .014 | .005U | .010U | .005U | .005U | .075 | .005U | .005U |
| AOCSL-01-20' | .011 | .005U | .010U | .005U | .005U | .082 | .005U | .005U |
| AOCSL-02-6" | .010U | .005U | .010U | .005U | .005U | .077 | .005U | .005U |
| AOCSL-02-5' | .010U | .005U | .010U | .005U | .005U | .059 | .005U | .005U |
| AOCSL-02-15' | .010U | .005U | .010U | .005U | .005U | .068 | .005U | .005U |
| AOCSL-03-6" | .010U | .005U | .010U | .005U | .005U | .067 | .005U | .005U |
| AOCSL-03-5' | .010U | .005U | .010U | .005U | .005U | .082 | .005U | .005U |
| AOCSL-03-15' | .012 | .005U | .010U | .005U | .005U | .062 | .005U | .005U |
| AOCSL-04-6" | .010U | .005U | .010U | .005U | .005U | .070 | .005U | .005U |
| AOCSL-04-5' | .010U | .005U | .010U | .005U | .005U | .025 | .005U | .005U |
| AOCSL-04-20' | .010U | .005U | .010U | .005U | .005U | .038 | .005U | .005U |
| AOCSL-05-3' | .010U | .005U | .010U | .005U | .005U | .037 | .005U | .005U |
| AOCSL-05-3' Dup | .010U | .005U | .010U | .005U | .005U | .041 | .005U | .005U |
| AOCSL-05-10' | .010U | .005U | .010U | .005U | .005U | .046 | .005U | .005U |
| AOCSL-05-20' | .010U | .005U | .010U | .005U | .005U | .034 | .005U | .005U |
| Maximum Background Concentrations | .010U | .005U | .010U | .005U | .005U | .015 | .005U | .005U |

AOCSL - Area of Concern Sampling Location.
 ppm - Parts per million.

U - Compound was analyzed for but not detected. Number preceding "U" indicates the detection limit.

5.4.3.2.4 Sulfate and Hydrazine Contamination

Sulfate was detected in three soil samples collected from AOC No. 1 at concentrations ranging from 11 to 71 ppm. Sulfate was detected at a concentration of 71 ppm in soil sampled from sampling location AOCSL-05 from a depth of 10 feet BLS. This was the only sample to exceed the background level. Sampling location AOCSL-05 is located in the former acid fueling station location (see Figure 5.18). Sulfate was detected at concentrations of 14 ppm and 11 ppm in soil sampled from locations AOCSL-03 from a depth of 6 inches BLS and AOCSL-04 from a depth of 20 feet BLS, respectively. Both sampling locations are located in the former lime pit.

Hydrazine was not detected in any of the soil samples collected from AOC No. 1.

5.4.3.2.5 Metals Contamination

Metals detected in soil samples collected from AOC No. 1 are shown in Table 5.10.

Lead was detected in all soil samples collected from AOC No. 1 at concentrations ranging from 2.6 to 11.0 ppm. Lead was detected at concentrations exceeding background levels in 11 of the 18 soil samples analyzed, with the highest concentration detected in the soil sample collected from sampling location AOCSL-03 from a depth of 6 inches BLS. Sampling location AOCSL-03 is located in the former lime pit. Detected lead concentrations in all sampling locations (at various depths) exceeded the background value for lead.

Arsenic was detected at concentrations ranging from 1.2 to 2.3 ppm, with concentrations exceeding background levels in soil sampled from sampling locations AOCSL-01, AOCSL-04, and AOCSL-05. Arsenic was detected at concentrations of 2.2 ppm, 2.3 ppm, and 2.1 ppm in soil sampled from locations AOCSL-01 from a depth of 10 feet BLS, AOCSL-04 from a depth of 6 inches BLS, and AOCSL-05 from a depth of 20 feet BLS, respectively. Cadmium was detected at concentrations ranging from 0.54 to 1.7 ppm, with concentrations exceeding background levels in soil samples collected from sampling locations AOCSL-01, AOCSL-03, and AOCSL-05. Chromium was detected at concentrations ranging from 6.8 to 14.0 ppm, with concentrations exceeding background levels in soil samples collected from sampling locations AOCSL-04 and AOCSL-05. Mercury was detected at concentrations ranging from 0.010 to 0.023 ppm, with concentrations exceeding background levels in the soil samples collected from locations AOCSL-01 from a depth of 10 feet BLS and AOCSL-04 from a depth of 20 feet BLS.

Table 5.10
Metals Detected in Soil Samples
Collected from AOC No. 1
261st CCSQ, Sepulveda ANGS, Van Nuys, California

| Sample ID Number | Arsenic (ppm) | Cadmium (ppm) | Chromium (ppm) | Copper (ppm) | Lead (ppm) | Nickel (ppm) | Zinc (ppm) | Thallium (ppm) | Mercury (ppm) | Selenium (ppm) |
|-----------------------------------|---------------|---------------|----------------|--------------|------------|--------------|------------|----------------|---------------|----------------|
| AOCSDL-01-6" | 1.4 | 0.54 | 8.2 | 9.7 | 2.8 | 12.0 | 38.0 | 0.500U | 0.010U | 0.26 |
| AOCSDL-01-4' | 1.7 | 1.7 | 11.0 | 13.0 | 9.0 | 14.0 | 53.0 | 0.500U | 0.010 | 5.2 |
| AOCSDL-01-4' -dup | 1.3 | 1.0 | 11.0 | 9.6 | 5.0 | 16.0 | 27.0 | 0.500U | 0.013 | 3.0U |
| AOCSDL-01-10' | 2.2 | 1.1 | 12.0 | 12.0 | 4.7 | 16.0 | 56.0 | 0.500U | 0.022 | 3.0U |
| AOCSDL-01-20' | 1.4 | 0.56 | 6.8 | 6.8 | 3.0 | 6.7 | 42.0 | 0.500U | 0.010U | 3.5 |
| AOCSDL-02-6" | 1.2 | 0.62 | 8.9 | 8.0 | 3.2 | 15.0 | 24.0 | 0.500U | 0.010U | 0.27 |
| AOCSDL-02-5' | 1.6 | 0.86 | 10.0 | 10.0 | 4.7 | 17.0 | 29.0 | 0.500U | 0.010U | 3.0U |
| AOCSDL-02-15' | 1.3 | 0.500U | 7.2 | 6.3 | 2.6 | 11.0 | 20.0 | 0.500U | 0.010U | 3.0U |
| AOCSDL-03-6" | 1.6 | 0.76 | 11.0 | 10.0 | 11.0 | 17.0 | 33.0 | 0.500U | 0.010U | 3.0U |
| AOCSDL-03-5' | 1.9 | 1.4 | 12.0 | 11.0 | 6.7 | 21.0 | 32.0 | 0.500U | 0.011 | 3.0U |
| AOCSDL-03-15' | 1.5 | 0.58 | 12.0 | 10.0 | 4.2 | 18.0 | 30.0 | 0.500U | NR | 3.0U |
| AOCSDL-04-6" | 2.3 | 0.87 | 13.0 | 11.0 | 4.6 | 19.0 | 33.0 | 0.500U | 0.011 | 3.0U |
| AOCSDL-04-5' | 1.7 | 0.80 | 14.0 | 14.0 | 7.3 | 17.0 | 38.0 | 0.69 | 0.017 | 3.0U |
| AOCSDL-04-20' | 1.2 | 0.500U | 14.0 | 15.0 | 5.3 | 11.0 | 38.0 | 0.500U | 0.023 | 3.0 |
| AOCSDL-05-3' | 1.6 | 0.83 | 12.0 | 13.0 | 5.1 | 15.0 | 35.0 | 0.500U | 0.010 | 3.0U |
| AOCSDL-05-3' -dup | 1.4 | 0.97 | 14.0 | 13.0 | 4.8 | 19.0 | 37.0 | 0.500U | 0.013 | 3.0U |
| AOCSDL-05-10' | 1.8 | 0.73 | 14.0 | 13.0 | 4.2 | 17.0 | 38.0 | 0.500U | 0.010U | 3.0U |
| AOCSDL-05-20' | 2.1 | 0.62 | 14.0 | 14.0 | 4.7 | 16.0 | 41.0 | 0.500U | 0.010U | 3.0U |
| Maximum Background Concentrations | 2.0 | 0.89 | 13.0 | 14.0 | 4.6 | 18.0 | 39.0 | 0.500U | 0.019 | 3.0U |

ppm – Parts per million.
AOCSDL – Area of Concern Sampling Location.
U – Compound was analyzed for but not detected. Number preceding "U" indicates the detection limit.
NR - Not reported.

Selenium was detected at concentrations of 5.2 ppm, 3.5 ppm, and 3.0 ppm in soil samples collected from sampling locations AOCSL-01 from depths of 4 feet BLS and 20 feet BLS and AOCSL-04 from a depth of 20 feet BLS, respectively. Copper was detected at concentrations ranging from 6.3 to 15.0 ppm, with concentrations exceeding background levels in the soil sample collected from sampling location AOCSL-04 from a depth of 20 feet BLS. Nickel was detected at concentrations ranging from 6.7 to 21.0 ppm, with concentrations exceeding background levels in soil sampled from sampling locations AOCSL-03, AOCSL-04, and AOCSL-05. The highest concentration of nickel was detected in the soil sample collected from location AOCSL-03 from a depth of 5 feet BLS. Zinc was detected at concentrations ranging from 20.0 to 56.0 ppm, with concentrations exceeding background levels in soil samples collected from sampling locations AOCSL-01 and AOCSL-05. The highest concentration of zinc was detected in the soil sample collected from location AOCSL-01 from a depth of 10 feet BLS.

5.4.4 Conclusions

Soil samples were collected from AOC No. 1 and submitted for laboratory analysis to confirm the presence or absence of contamination and to provide data needed to determine if the identified contamination at the AOC is significant enough to warrant classification as an IRP site. Past activities at the AOC indicated that suspected contamination consists primarily of solvents, fuels, sulfuric acid (battery electrolyte), hydraulic fluid, motor oil, and various paints and thinners. Therefore, samples were submitted for analysis of VOCs, SVOCs, priority pollutant metals, pesticides/PCBs, sulfate, and hydrazine.

With the exception of acetone, which was detected slightly above background levels in two sampling locations (and which is a suspected laboratory contaminant), no VOCs were detected in soil samples collected at AOC No. 1, and no SVOCs were detected. Pesticides were detected in one sampling location in the former lime pit, but no PCBs were detected in any of the soil samples collected at AOC No. 1.

Sulfate was detected above the background level in one sampling location, but hydrazine was not detected in any of the soil samples collected at AOC No. 1. Priority pollutant metal background values were variously exceeded in the soil samples collected at AOC No. 1; however, no levels were substantially above background results.

SECTION 6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 SUMMARY

An SI was conducted at IRP Site No. 1 (Area Behind Vehicle Maintenance) and AOC No. 1 (Lime Pit) located at the 261st CCSQ, Sepulveda ANGS, Van Nuys, California. IRP Site No. 1 was identified during the PA, conducted by Science and Technology, Inc. in 1990, and recommended for further investigation under the IRP. AOC No. 1 was added to the SI at the request of California regulatory agencies.

The HQ ANG/CEVR authorized OpTech to prepare an SI work plan and conduct the SI at IRP Site No. 1 and AOC No. 1. This investigation was conducted as outlined in the SI Work Plan submitted to HQ ANG/CEVR, LARWQCB, and DTSC in April 1994, and approved in May 1994. The field investigation at Sepulveda ANGS commenced on 6 June 1994 and was completed on 10 June 1994.

The field investigation at Sepulveda ANGS was accomplished by completing the following tasks:

- Install one background sampling location from which three soil samples were collected for analysis of VOCs, SVOCs, priority pollutant metals, pesticides and PCBs, and sulfate to determine background levels;
- Collect 54 soil vapor samples for determining the optimum number and location of soil sampling borings needed to confirm the absence or presence of soil contamination at IRP Site No. 1;
- Install 10 soil sampling borings at IRP Site No. 1 to determine whether contamination exists at the site;
- Collect 24 soil samples from IRP Site No. 1 for analysis of VOCs, SVOCs, priority pollutant metals, TPH (diesel and gasoline), and oil and grease;
- Install five soil sampling locations at AOC No. 1 to determine whether contamination exists at the site;
- Collect 16 soil samples from AOC No. 1 for analysis of VOCs, SVOCs, pesticides and PCBs, priority pollutant metals, sulfate, and hydrazine; and

- Survey the location and elevation of all soil vapor sampling points and soil sampling locations.

6.2 CONCLUSIONS

6.2.1 IRP Site No. 1 (Area Behind Vehicle Maintenance)

IRP Site No. 1 is located on the northeast side of Sepulveda ANGS behind the Motor Pool (Building 6) and along the boundary fence line. The area along the boundary fence line was used, on a regular basis, as a waste disposal area from 1973 until the early 1980s. The disposed materials included waste oils, hydraulic fluid, and small amounts of paint and solvents. A loading dock, located south of the boundary fence, was reportedly used for maintenance of vehicles. Waste oils were sometimes drained directly onto the ground in this area.

The soil vapor survey detected primarily TPH and methane contamination along the fence line, in the area formerly used for waste disposal, and in the area to the south and west of IRP Site No. 1. TPH and methane contamination were detected at maximum concentrations of 1,854 ppmV and 16,062 ppmV, respectively. Based on the soil vapor survey results, soil sampling borings were located to confirm and/or to delineate contamination detected in the soil vapor survey.

Soil samples were collected from IRP Site No. 1 and submitted for laboratory analysis to confirm the presence or absence of contamination and to provide data needed to reach a decision point for the site. Past activities at the site indicated that suspected contamination consists primarily of waste oils, hydraulic fluid, paints, and solvents. Therefore, samples were submitted for analysis of VOCs, SVOCs, priority pollutant metals, TPH, and oil and grease. Data validation did not uncover any problems which would affect the investigation.

6.2.1.1 Soil Contamination

Contaminants in soil samples collected during the SI were detected at concentrations exceeding background values. Lead, TPH, and oil and grease contamination were found in a limited area at a depth of 6 inches to the north and east of IRP Site No. 1 (behind Vehicle Maintenance).

TPH (diesel) and hydrocarbons were detected at concentrations greater than background values in soil samples collected from a depth of 6 inches BLS from sampling borings SB-4, SB-5 and SB-6. Soil sampling boring SB-4 is located along the fence line within the area formerly used

for waste disposal. Sampling boring SB-5 is located approximately 15 feet north of the former vehicle maintenance ramp, and SB-6 is located in the area of the former vehicle maintenance ramp. TPH (diesel) was detected at a concentration of 1,400 ppm in the soil sample collected from sampling boring SB-4. Hydrocarbon range C6 - C40+ was detected at a concentration of 1,300 ppm in the soil sample collected from boring SB-5, and hydrocarbon range C22 - C40+ and C9 - C19 hydrocarbons were detected at concentrations of 3,600 ppm and 1,700 ppm, respectively, in the duplicate soil sample. Hydrocarbon range C22 - C40+ and C7 - C10 hydrocarbons were detected at concentrations of 490 ppm and 310 ppm, respectively, in the soil sample collected from boring SB-6 from a depth of 6 inches BLS.

Oil and grease was detected in soil samples collected from all sampling borings, with the exception of boring SB-8. The highest concentrations were detected in the soil samples collected from a depth of 6 inches BLS and were not detected below a depth of 4 feet BLS. Oil and grease was detected at concentrations ranging from 28 to 51,000 ppm. The highest concentrations were detected in the soil sample (20,000 ppm) and duplicate soil sample (51,000 ppm) collected from boring SB-5. Oil and grease was detected at concentrations of 8,500 ppm, 5,700 ppm, 2,800 ppm, and 1,600 ppm in soil samples collected from borings SB-3, SB-4, SB-6, and SB-7, respectively, from a depth of 6 inches BLS.

Lead was detected at concentrations exceeding background values in soil samples collected from boring SB-4 from a depth of 6 inches BLS. Lead was detected at concentrations of 2,400.0 ppm and 850.0 ppm in the soil sample and duplicate soil sample, respectively.

6.2.2 AOC No. 1 (Lime Pit)

AOC No. 1 is located on the west side of Sepulveda ANGS, approximately 55 feet west of the recently built Vehicle Maintenance/AGE Facility and 150 feet north of the underground missile storage structures. When the Station was built for use as a NIKE Missile Site in the 1950s, a lime pit was constructed to be used for acid neutralization. General operational activities at the NIKE Site involved the use of a variety of chemicals (e.g., solvents, battery acid, hydraulic fluids, fuels, and possibly PCBs). Based on the time period, the likely chemicals that were used are: carbon tetrachloride, PS-661, PD-680, PCE, TCE, fuels, sulfuric acid (battery electrolyte), hydraulic fluid, motor oil, and various paints and thinners. The neutralization of acid was the original design use of the lime pit.

Soil samples were collected from AOC No. 1 and submitted for laboratory analysis to confirm the presence or absence of contamination and to provide data needed to determine if the

identified AOC is significant enough to warrant classification as an IRP Site. Past activities at the AOC indicated that suspected contamination consists primarily of solvents, fuels, sulfuric acid, hydraulic fluid, motor oil, and various paints and thinners. Therefore, samples were submitted for analysis of VOCs, SVOCs, priority pollutant metals, pesticides/PCBs, sulfate, and hydrazine. Data validation did not uncover any problems which would affect the investigation.

6.2.2.1 Soil Contamination

No VOCs (other than acetone, which is a suspected laboratory contaminant), SVOCs, or PCBs were detected in soil samples collected at AOC No. 1. Priority pollutant metal background values were variously exceeded in the soil samples collected at AOC No. 1; however, no levels were substantially above background results.

6.3 RECOMMENDATIONS

Based on the results of the SI conducted, the following recommendations are presented:

- The results of the SI indicate TPH, oil and grease, and lead contamination in a limited area to the north and east of IRP Site No. 1 (area behind Vehicle Maintenance). Further investigation is required to delineate the extent of the contamination.
- An Engineering Evaluation/Cost Analysis approach is recommended to fully delineate the extent of contamination and conduct remediation activities, if required.
- The results of the SI indicate no further investigation is warranted at AOC No. 1 (Lime Pit).

SECTION 7.0 REFERENCES

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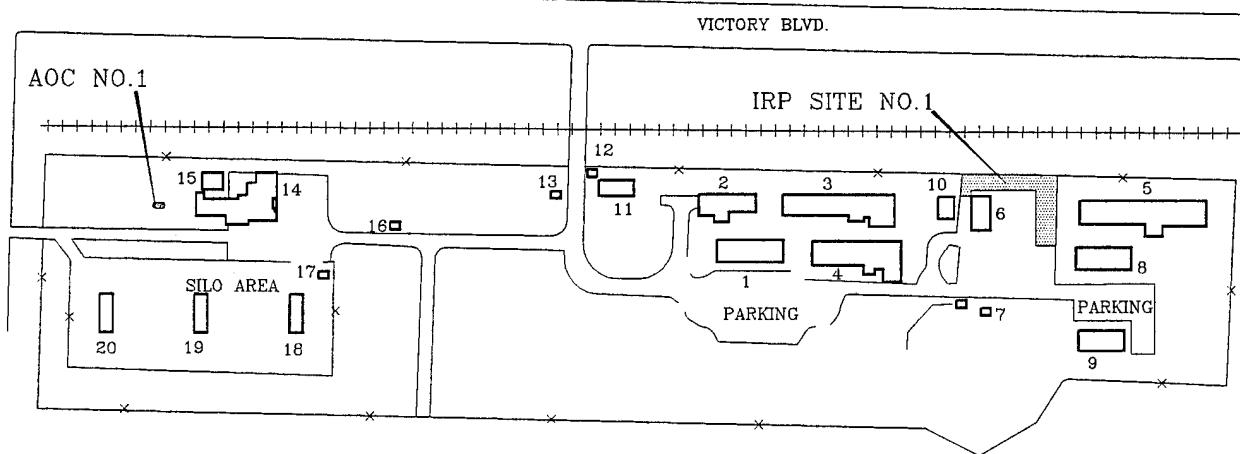
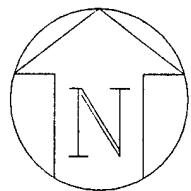
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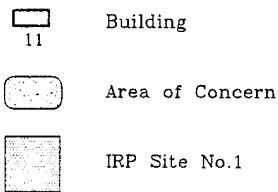
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LEGEND



Building

Railroad

Fence

Area of Concern

IRP Site No.1

0 150 300
SCALE IN FEET

SOURCE: SEPULVEDA ANGS PLAN, 1976 (MODIFIED).

INSIDE
BACK
COVER
SEPULVEDA\SEPU1-2L

LOCATIONS OF IRP SITE NO.1
AND AOC NO.1
261st CCSQ, Sepulveda ANGS
Van Nuys, California

OPTECH
OPERATIONAL TECHNOLOGIES
CORPORATION

JANUARY 1996